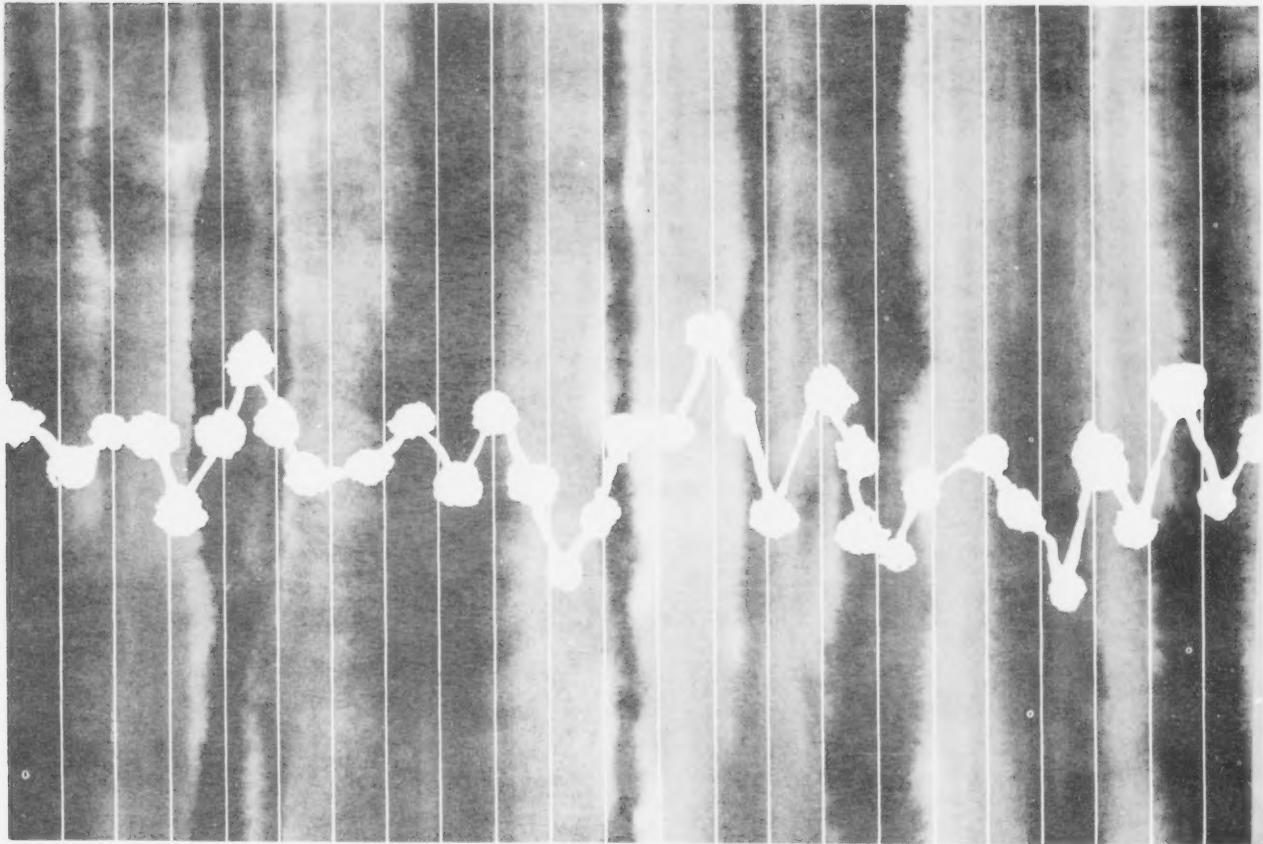


defense indicators

JANUARY 1978



U.S. DEPARTMENT OF COMMERCE • BUREAU OF ECONOMIC ANALYSIS



This report is prepared in the Statistical Indicators Division, Bureau of Economic Analysis. Technical staff and their responsibilities for the publication are—

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The Secretary of Commerce has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Department. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget through September 1, 1980.

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defense indicators

January 1978

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	Page
Introduction	1
Table A. Summary of Recent Data and Current Percent Changes for Principal Defense Indicators	4
Chart 1. Gross National Product and National Defense Purchases	5
Chart 2. Advance Indicators of Defense Activity	6
Chart 3. Intermediate and Final Indicators of Defense Activity	9
Chart 4. Defense-Related Balance of Payments Components	13
Table 1. Gross National Product and National Defense Purchases	14
Table 2. Advance Indicators of Defense Activity	15
Table 3. Intermediate and Final Indicators of Defense Activity	22
Table 4. Defense-Related Balance of Payments Components	27
Appendix A: Seasonal Adjustment Factors	28
Appendix B: Average Changes and Related Measures of Variability ..	29
Appendix C: Historical Data (<i>See Alphabetical Index—Series Finding Guide</i>)	
Appendix D: Data Sources and Series Descriptions (<i>See Alphabetical Index—Series Finding Guide</i>)	
Alphabetical Index—Series Finding Guide	Back Cover

DISCONTINUATION OF *DEFENSE INDICATORS*

Publication of ***DEFENSE INDICATORS*** will cease with the June 1978 issue as a result of a review under the President's Zero Base Budgeting procedure.

Statistical coverage of defense-related activities will be expanded in ***BUSINESS CONDITIONS DIGEST***. The Superintendent of Documents will substitute ***BUSINESS CONDITIONS DIGEST*** for the unused portion of the ***DEFENSE INDICATORS*** subscription on a prorated basis. Those who already subscribe to **BCD** will have their subscriptions to **BCD** extended proportionately.

Annual subscription price of ***BUSINESS CONDITIONS DIGEST*** is \$40 domestic, \$50 foreign. Single copy price: \$3.50 domestic, \$4.50 foreign. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Introduction

The purpose of this monthly report is to bring together the principal time series on defense activity which influence short-term changes in the national economy. These include series on obligations, contracts, orders, shipments, inventories, expenditures, employment, and earnings. Most are monthly but a few quarterly series are included. The series numbers used are for identification purposes only and do not reflect relationships or order.

Classification of Series

Chart 1 compares Government purchases of goods and services for national defense with total gross national product. GNP is the market value of the final output of goods and services produced by the Nation's economy and represents a very broad measure of aggregate economic activity. In addition to national defense purchases, it includes Federal Government purchases of goods and services for nondefense purposes, State and local government purchases, personal consumption expenditures, gross private domestic investment, and net exports of goods and services. Chart 1 also presents national defense purchases as a percent of gross national product and, for both series, changes from the previous quarter.

A related group of series is shown in Chart 4, "Defense Related Balance of Payments Components." These series show the effects of defense-related economic activity on the balance of payments accounts.

The remaining series are grouped in accordance with the time at which the activities they measure occur within the defense order-production-delivery process. Those series measuring activities that usually precede production, such as new orders placed with defense products industries and contract awards, are presented in Chart 2, "Advance Indicators of Defense Activity." Chart 3, "Intermediate and Final Indicators of Defense Activity," presents series that measure activities which tend to move at the same time as production (such as employment) and activities which usually follow production (such as shipments).

Series Included

Following is a list of the series as they appear in charts 1, 2, 3, and 4 (the source agencies are abbreviated in parentheses; detailed lists of sources for charts 1, 2, and 3 appeared as appendixes to the August and October 1968 issues of this report).

Gross National Product and National Defense Purchases

Gross national product (BEA)
Federal Government purchases of goods and services, national defense (BEA)
National defense purchases as a percent of gross national product (BEA)
Gross national product, changes from previous quarter (BEA)
National defense purchases, changes from previous quarter (BEA)

Advance Indicators of Defense Activity

Defense Department gross obligations incurred, total (DOD)
Defense Department gross obligations incurred, procurement (DOD)
Gross obligations incurred outside the Government for national defense (Treasury)

Defense Department military prime contract awards for work performed in the United States (DOD)

Defense Department gross unpaid obligations outstanding (DOD)

Manufacturers' new orders (Census):

Defense products industries

Defense products

Manufacturers' new orders from the U.S. Government, aerospace industries (Census):

Average weekly overtime hours, production workers, defense products industries (BLS)

Accession rate, defense products industries (BLS)

Layoff rate, defense products industries (BLS)

Intermediate and Final Indicators of Defense Activity

Output of defense and space equipment (FRB)

Manufacturers' inventories (Census):

Defense products industries

Defense products

Manufacturers' unfilled orders (Census):

Defense products industries

Defense products

Manufacturers' unfilled orders from the U.S. Government, aerospace industries (Census)

Defense Department progress payments outstanding (DOD)

Employment in defense products industries, total (BLS)

Employment in defense products industries, production workers (BLS)

Index of aggregate weekly hours, defense products industries (BLS)

Index of aggregate weekly payrolls, production workers, defense products industries (BLS)

Defense Department personnel, military, active duty (DOD)

Defense Department personnel, civilian, direct hire employment (DOD)

Defense Department net outlays, total, military functions and military assistance (DOD)

Defense Department net outlays, procurement (DOD)

Budget outlays for the national defense function (Treasury)

Defense Department personnel compensation (DOD)

Manufacturers' shipments (Census):

Defense products industries

Defense products

Manufacturers' shipments to the U.S. Government, aerospace industries (Census)

Ratio, manufacturers' unfilled orders to shipments (Census):

Defense products industries

Defense products

Ratio, manufacturers' inventories to shipments (Census):

Defense products industries

Defense products

Defense-Related Balance of Payments Components

Transfers under U.S. military agency sales contracts—exports (BEA)

Direct defense expenditures—imports (BEA)

U.S. Government cash receipts associated with military sales contracts (BEA)

Some additional data are included in the tables though not presented in the charts. These include Defense Department military prime contract awards by procurement category (e.g., for aircraft, missiles and space systems, ships, weapons, and ammunitions), the operations component of Defense Department

gross obligations incurred, gross unpaid obligations outstanding, and net outlays and the procurement component of gross unpaid obligations outstanding.

Description of Basic Data

The Department of Defense compiles statistics on obligations, contract awards, personnel compensation, and outlays. The DOD obligations and outlays data are based on the Defense Department's monthly *Status of Funds* report which is developed from accounting data and is designed to provide information on the total status of Defense Department financing. Accounts included in this report are aggregated by appropriation categories including personnel costs, operations and maintenance, procurement, research and development, and construction. The *Status of Funds* report duplicates some obligations. That is, obligations of one government unit to another unit are not netted out.

The Defense Department's *Contract Awards* report covers the awarding of procurement contracts. These include obligations for operating and maintenance supplies, equipment and services, research and development, and construction in addition to the obligations for items that constitute the fiscal "procurement" category. The statistics are aggregated by commodity categories including aircraft, missile and space systems, ships, weapons, ammunition, electronics and communication equipment, fuels, and textiles and clothing. The *Contract Awards* report includes procurement for NASA, other nondefense agencies, and the Foreign Military Sales Program which are not included in the *Status of Funds* report.

The Census quarterly new orders, unfilled orders and shipments series for "aerospace industries" are based on reports of companies classified into the following industry categories:

Industry	SIC Code
Aircraft and parts	372
Guided missiles and space vehicles, completely assembled ..	1925

The Census and BLS data for "defense products industries" presented in this report cover companies and establishments¹ classified into the following industry categories in accordance with the *Standard Industrial Classification Manual*, 1967 edition, Executive Office of the President, Bureau of the Budget:

Industry	SIC Code
Ordnance and accessories	19
Communication equipment	366
Aircraft and parts	372

Establishments reporting to the BLS are classified into industries on the basis of their principal product or activity as determined from information on annual sales volume, which is collected each year on a supplement to the monthly report. The entire employment of an establishment making more than one product or engaging in more than one activity is included under the industry accounting for the largest percentage of the annual sales of that establishment.

The Census Bureau's monthly survey is based primarily on reports at the company level and the monthly estimates are benchmarked to the establishment data from the *Annual Survey*

of Manufactures. Also, many of the large diversified companies file separate divisional reports monthly. Although the reports in the survey are also classified according to their principal product or activity, this difference in the organizational level from which reports are received results in firms being classified into different industries in the BLS and Census surveys and, consequently, limits somewhat the comparability of the data collected by these agencies. However, as we know from past studies in this area, some differences in industrial classification between BLS and Census data would remain even if reports came from the same organizational levels.

Both the Census and the BLS data include a significant amount of nondefense activities carried on by companies and establishments classified in the above industries. For example, the data cover the production of commercial as well as military aircraft. On the other hand, they exclude significant amounts of defense work carried on by companies and establishments classified in industries other than those listed above (e.g., the manufacture of military uniforms and the shipbuilding industry).²

Census data for "defense products" are based on separate reports on defense work filed by large defense contractors in the ordnance, communications, complete aircraft, aircraft parts, and shipbuilding industries. Thus, they differ from the "defense products industries" data in that they include defense activity in the shipbuilding industry and exclude nondefense work in the other industries covered. Defense products data cover work for the Department of Defense and exclude contracts for the National Aeronautics and Space Administration and the Atomic Energy Commission.

The DOD data are not strictly comparable in coverage with either the BLS or the Census data since the Defense Department figures (1) cover products of industries not included in the defense products category; (2) generally do not include non-defense activities (except that some series, such as contract awards, include activities by the Department of Defense on behalf of nondefense agencies); and (3) do not cover intermediate activities such as those related to subcontracting and supplying of parts. Thus, the Census Bureau data for manufacturers' new orders and shipments of defense products industries, for example, differ in coverage from the DOD contract awards and net outlays series.

The Department of Defense data are not comparable with Federal Government purchases of goods and services for national defense or the Treasury Department obligations and outlays data since the BEA and Treasury data cover defense-related activities of other agencies such as the Atomic Energy Commission, the Selective Service System, and the Office of Emergency Planning.

Projects to improve the comparability of the data collected by the Bureau of the Census, the Bureau of Labor Statistics, and the Department of Defense and to improve the separation of defense and nondefense activity for the Census and BLS data are being undertaken by the statistical agencies under the leadership of the Interagency Committee mentioned earlier in this report.

¹An establishment is a single physical location where business is conducted (e.g., a plant). A company often includes more than one establishment.

²See the Bureau of the Census publication *Shipments of Defense-Oriented Industries, Current Industrial Reports, Series MA-175*, for annual estimates of shipments by industry to the Department of Defense, the National Aeronautics and Space Administration, and the Atomic Energy Commission. Included also are industries not covered by the "defense products industries" category.

Variability of Data

Seasonal variations dominate the movements of many time series, and adjustments for average seasonal fluctuations are often necessary to bring out the underlying trends of the series. These seasonal adjustments allow for the effects of repetitive intrayear variations resulting primarily from normal differences in weather conditions and from various institutional arrangements. An additional adjustment is sometimes necessary for series which contain considerable variation resulting from the number of working or trading days in each month. As used in this report, the term "seasonal adjustment" includes trading-day adjustments where they have been made.

Most of the series in this report are shown in seasonally adjusted form. For Defense Department and BLS series, unadjusted data are also shown since they are not readily available elsewhere. Current seasonal adjustment factors are shown in appendix A.

The effect of seasonal adjustment in reducing the month-to-month variation in the data can be seen in appendix B. There, the first two columns show the average month-to-month percent change (without regard to sign) in the data before and after seasonal adjustment. Some series still show very irregular month-to-month movements after adjustment for seasonal variation. The measures in appendix B also indicate the month-to-month variation in the irregular and short-term trend components of the series. For many series, irregular movements tend to dominate 1- or 2-month comparisons, and the underlying short-term trend becomes dominant in comparisons over longer spans. The "months for cyclical dominance" (MCD) measure estimates the span of months required for the short-term trend to dominate the irregular component. Series with an MCD of 4 or more are supplemented with a moving average (with the

number of terms equal to MCD) in the charts. Data for these moving averages are listed in the basic data tables.

Guide to Charts and Tables

Most series are plotted on a standard ratio scale so that equal percent changes cover the same vertical distance. For these series, an increase of 100 percent covers approximately 1 inch. Arithmetic scales are used for series with zero or negative data, series which could approach zero (e.g., average overtime hours and layoff rate), and series expressed in percent.

In general, monthly data are plotted with a solid line and quarterly data are represented by a solid line with quarterly plot points. Quarterly series are also identified with a "Q" after their titles. For series which include a moving average, a dashed line is used for the actual monthly data and a solid line for the moving average. (The moving average values are centered within the span of months they are computed from.) Exceptions to this scheme may be necessary for special situations. Data apply to the whole period except for series designated "EOM" (end of month) or "EOQ" (end of quarter). The number in the box at the right of each series indicates the latest month (Arabic) or quarter (Roman) plotted. Parallel lines across a series indicate a break in continuity (e.g., data not available or change in series definition).

Tables 1, 2, 3, and 4 present current data for the series shown in the charts, including the moving averages. They also include unadjusted data for some series and data for related series which are not plotted. Table A summarizes the most recent data and percent changes for many of the series in the report. Historical data are shown on an intermittent basis in appendix C. (The index indicates the appropriate issue for each series.)

New Features and Changes for This Issue

1. Publication of *DEFENSE INDICATORS* will cease with the June 1978 issue. See the announcement on page ii for further details.
2. Current seasonal adjustment factors, which are based on historical data patterns, are inaccurate for some defense series because of the change in the Government's fiscal year, and suitable seasonal factors cannot be established at this time. For this reason, seasonally adjusted data are not shown for Defense Department gross obligations incurred (series 617, 619, and 621), Gross obligations incurred outside the Federal Government for national defense (series 623), and Defense Department military prime contract awards, total (series 625) for the period since May 1977, nor are they shown for the components of military prime contract awards (series 626, 627, 629-637, and 640) for the period since the first quarter 1977. For these series, unadjusted data are shown in the data tables and seasonal adjustment factors on the old basis are shown in appendix A.

The February issue of *DEFENSE INDICATORS* is scheduled for release on March 2.

Table A. Summary of Recent Data and Current Percent Changes for Principal Defense Indicators

(Preliminary and revised figures are not identified here but the user may consult tables 1, 2, 3, and 4 where such identification is given)

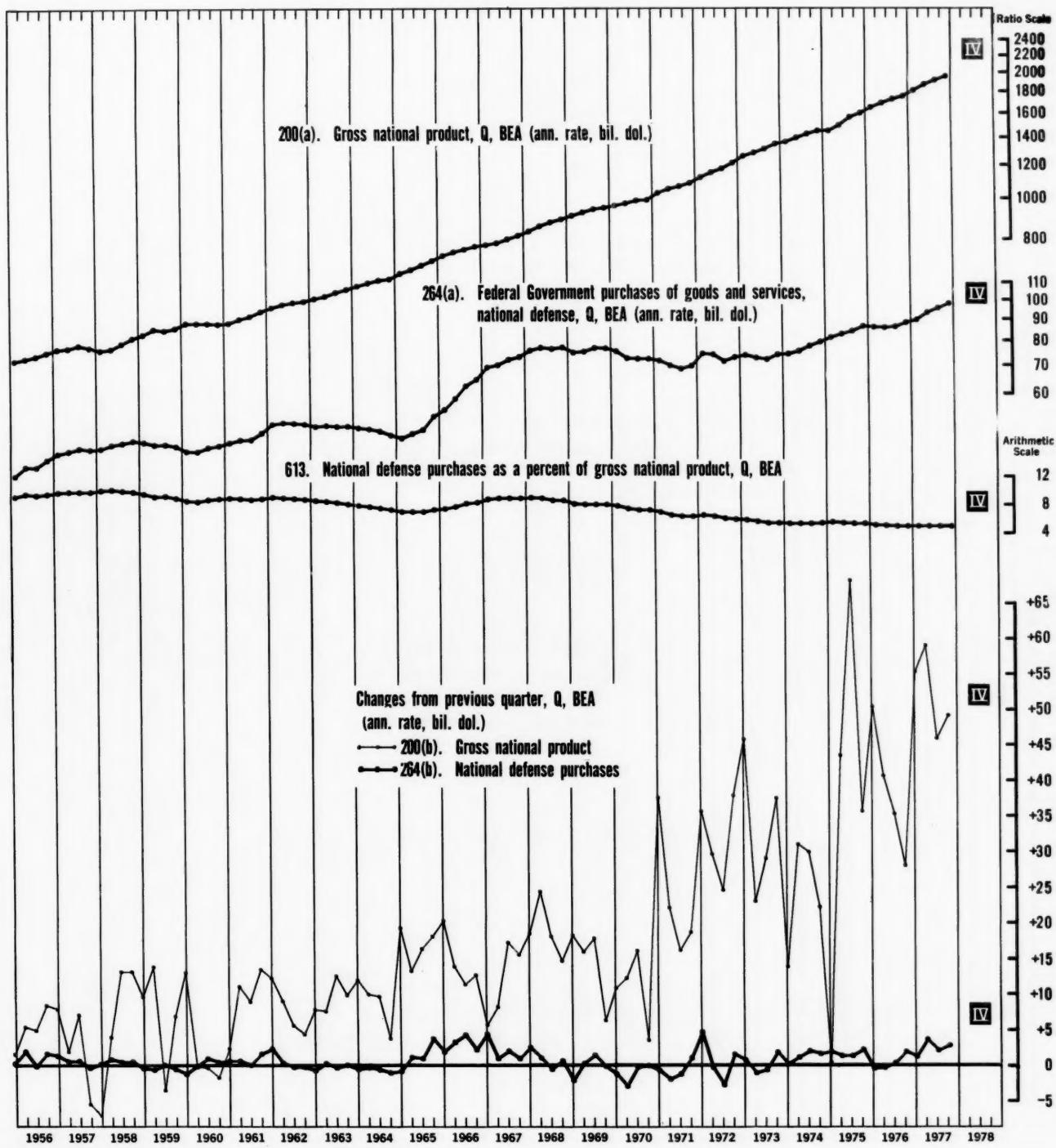
Series title	Unit of measure	Basic data								Percent change					Series number
		Average		2d Q 1977	3d Q 1977	4th Q 1977	Oct. 1977	Nov. 1977	Dec. 1977	Oct. to Nov. 1977	Nov. to Dec. 1977	2d Q to 3d Q 1977	3d Q to 4th Q 1977		
		1976	1977												
GROSS NATIONAL PRODUCT AND NATIONAL DEFENSE PURCHASES															
200. Gross national product (BEA)	Ann. rate, bil. dol.	1706.5	1890.4	1869.9	1915.9	1965.1	2.5	2.6	200
264. Federal Government purchases of goods and services, national defense (BEA)	do	86.8	94.3	93.4	95.6	98.6	2.4	3.1	264
613. National defense purchases as a percent of GNP (BEA) ¹	Percent	5.1	5.0	5.0	5.0	5.0	0.0	0.0	613
ADVANCE INDICATORS OF DEFENSE ACTIVITY															
Defense Dept. gross obligations incurred (DOD):															
617. Total	Ann. rate, bil. dol.	109.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	617
621. Procurement	do	24.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	621
623. Gross obligations incurred outside the Federal Government for national defense (Treasury)	do	117.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	623
625. Defense Department military prime contract awards for work performed in the U.S. (DOD)	do	50.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	625
643. Defense Department gross unpaid obligations outstanding (DOD)	Bil. dol. end of period	50.1	NA	53.3	48.7	NA	53.1	55.7	NA	4.9	NA	-8.6	NA	643	
648. Mfrs' new orders, defense products (Census)	Ann. rate, bil. dol.	29.5	32.8	36.3	22.2	48.7	51.2	42.8	51.9	-16.4	21.3	-38.8	119.4	648	
650. Manufacturers' new orders from the U.S. Government, aerospace industries (Census)	do	21.2	NA	25.7	NA	NA	NA	NA	650
653. Average weekly overtime hours, production workers, defense products industries (BLS) ¹	Hours	2.5	NA	3.0	2.9	NA	3.2	3.2	NA	0.0	NA	-0.1	NA	653	
654. Accessions, defense products industries (BLS) ¹	Number per 100 employees	1.6	NA	2.2	1.8	NA	2.0	NA	NA	NA	NA	-0.4	NA	654	
655. Layoffs, defense products industries (BLS) ¹	do	0.7	NA	0.4	0.6	NA	0.4	NA	NA	NA	NA	0.2	NA	655	
INTERMEDIATE AND FINAL INDICATORS OF DEFENSE ACTIVITY															
657. Output of defense and space equipment (FRB)	1967=100	78.4	79.6	80.1	80.7	79.3	78.9	79.2	79.9	0.4	0.9	0.7	-1.7	657	
659. Mfrs' inventories, defense products (Census)	Bil. dol. end of period	6.6	NA	6.9	6.9	NA	6.6	6.6	NA	0.0	NA	0.0	NA	659	
661. Mfrs' unfilled orders, defense products (Census)	do	32.2	34.1	31.9	29.8	34.1	31.5	32.4	34.1	2.9	5.2	-6.6	14.4	661	
664. Manufacturers' unfilled orders from the U.S. Government, aerospace industries (Census)	do	21.7	NA	24.3	NA	NA	NA	NA	664
666. Defense Department progress payments outstanding (DOD) ⁽¹⁾	do	8.5	NA	8.7	7.8	NA	...	...	...	...	...	-10.3	NA	666
Employment in defense products industries (BLS):															
670. Total	Thousands	1,064	NA	1,081	1,087	NA	1,050	1,051	NA	0.1	NA	0.6	NA	670	
671. Production workers	do	531	NA	540	545	NA	512	513	NA	0.2	NA	0.9	NA	671	
673. Index of aggregate weekly hours, defense products industries (BLS)	1967=100	62.8	NA	64.4	64.8	NA	62.6	62.5	NA	-0.2	NA	0.6	NA	673	
675. Index of aggregate weekly payrolls, production workers, defense products industries (BLS)	do	101.2	NA	112.6	115.4	NA	108.6	109.2	NA	0.6	NA	2.5	NA	675	
Defense Department personnel (DOD) ⁽¹⁾															
677. Military, active duty	Thousands, end of period	2,072	2,060	2,075	2,075	2,060	2,072	2,069	2,060	-0.1	-0.4	0.0	-0.7	677	
678. Civilian, direct hire employment	do	995	NA	1,009	982	NA	983	985	NA	0.2	NA	-2.7	NA	678	
Defense Department net outlays (DOD):															
680. Total, military functions and military assistance	Ann. rate, bil. dol.	88.3	97.8	93.9	105.1	98.6	97.1	102.9	95.8	6.0	-6.9	11.9	-6.2	680	
682. Procurement	do	16.4	18.6	17.4	18.8	19.9	18.0	24.2	17.6	34.4	-27.3	8.0	5.9	682	
683. Budget outlays for the national defense function (Treasury)	do	89.1	NA	95.2	107.7	NA	99.5	104.4	NA	4.9	NA	13.1	NA	683	
685. Defense Dept. personnel compensation (DOD)	do	35.5	NA	37.2	37.3	NA	38.2	38.1	NA	-0.3	NA	0.3	NA	685	
688. Mfrs' shipments, defense products (Census)	do	26.5	31.0	30.5	30.6	31.5	30.5	31.8	32.3	4.3	1.6	0.3	2.9	688	
689. Manufacturers' shipments to the U.S. Government, aerospace industries (Census)	do	19.1	NA	20.2	NA	NA	...	...	...	...	NA	NA	NA	689
691. Ratio, manufacturers' unfilled orders to shipments, defense products (Census)	Ratio	13.5	12.2	12.5	12.0	12.4	12.4	12.3	12.6	-0.8	2.4	-4.0	3.3	691	
693. Ratio, manufacturers' inventories to shipments, defense products (Census)	do	3.0	NA	2.6	2.7	NA	2.6	2.5	NA	-3.8	NA	3.8	NA	693	
DEFENSE-RELATED BALANCE OF PAYMENTS COMPONENTS															
546. Transfers under U.S. military agency sales contracts—exports (BEA) ¹	Ann. rate, mil. dol.	5,213	NA	6,856	8,032	NA	...	...	...	...	...	1,176	NA	546
547. Direct defense expenditures—imports (BEA) ¹ ⁽¹⁾	do	4,847	NA	5,612	5,724	NA	...	...	...	...	...	112	NA	547
696. U.S. Government cash receipts associated with military sales contracts (BEA) ¹ ⁽¹⁾	do	8,213	NA	7,532	7,820	NA	...	...	...	...	...	288	NA	696

NOTE: This table is presented as a convenient summary of the current data for many of the indicators in this report. In many cases, data shown here are rounded to fewer digits or are in different units than those shown in tables 1, 2, 3, and 4. Where available, annual figures are those published by the source agencies; otherwise they (and the quarterly figures for monthly series) are averages or totals of the data as shown in the data tables. Series are seasonally adjusted except for those indicated by ⁽¹⁾, which appear to contain no seasonal movement.

NA = not available.

¹Differences rather than percent changes are shown for this series.

Gross National Product and National Defense Purchases



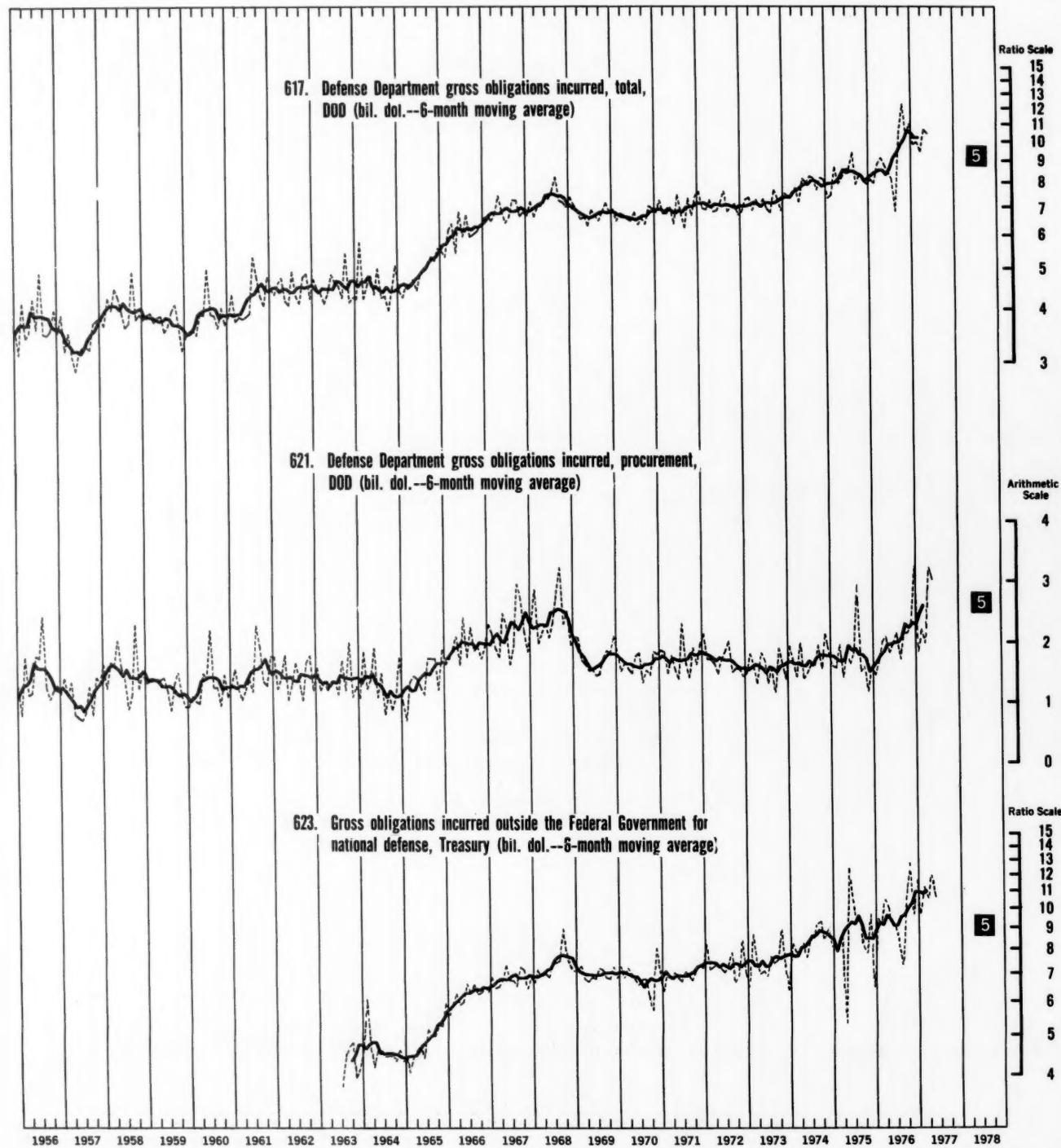
Current data for these series are shown on page 14.

defense indicators

CHART

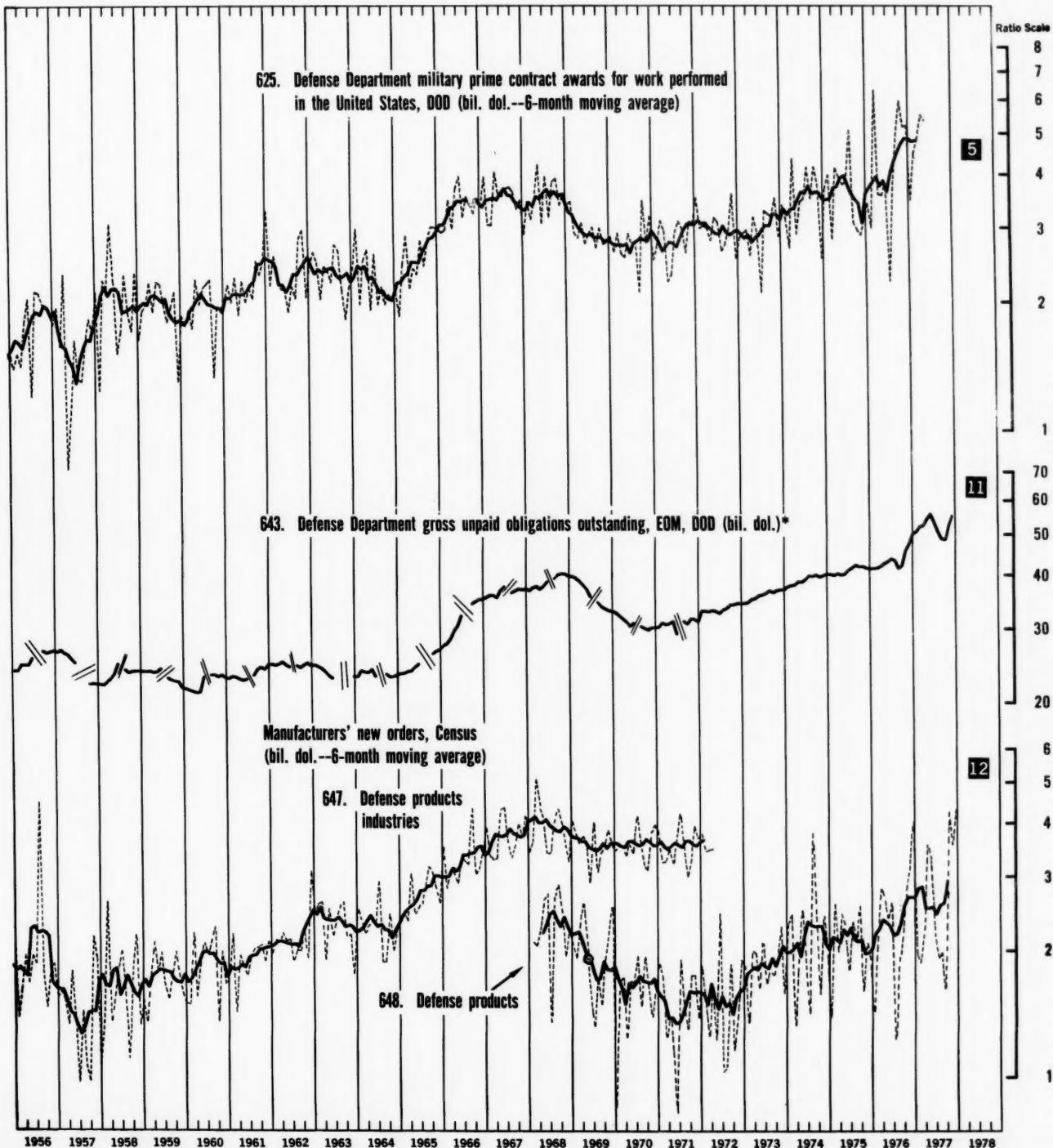
2

Advance Indicators of Defense Activity



Current data for these series are shown on pages 15 and 16.

Advance Indicators of Defense Activity--Continued



*Data for the following months are not available: July of 1956-71; August of 1956-57 and 1963-66;
September of 1957, 1963, and 1965; October and November of 1963.

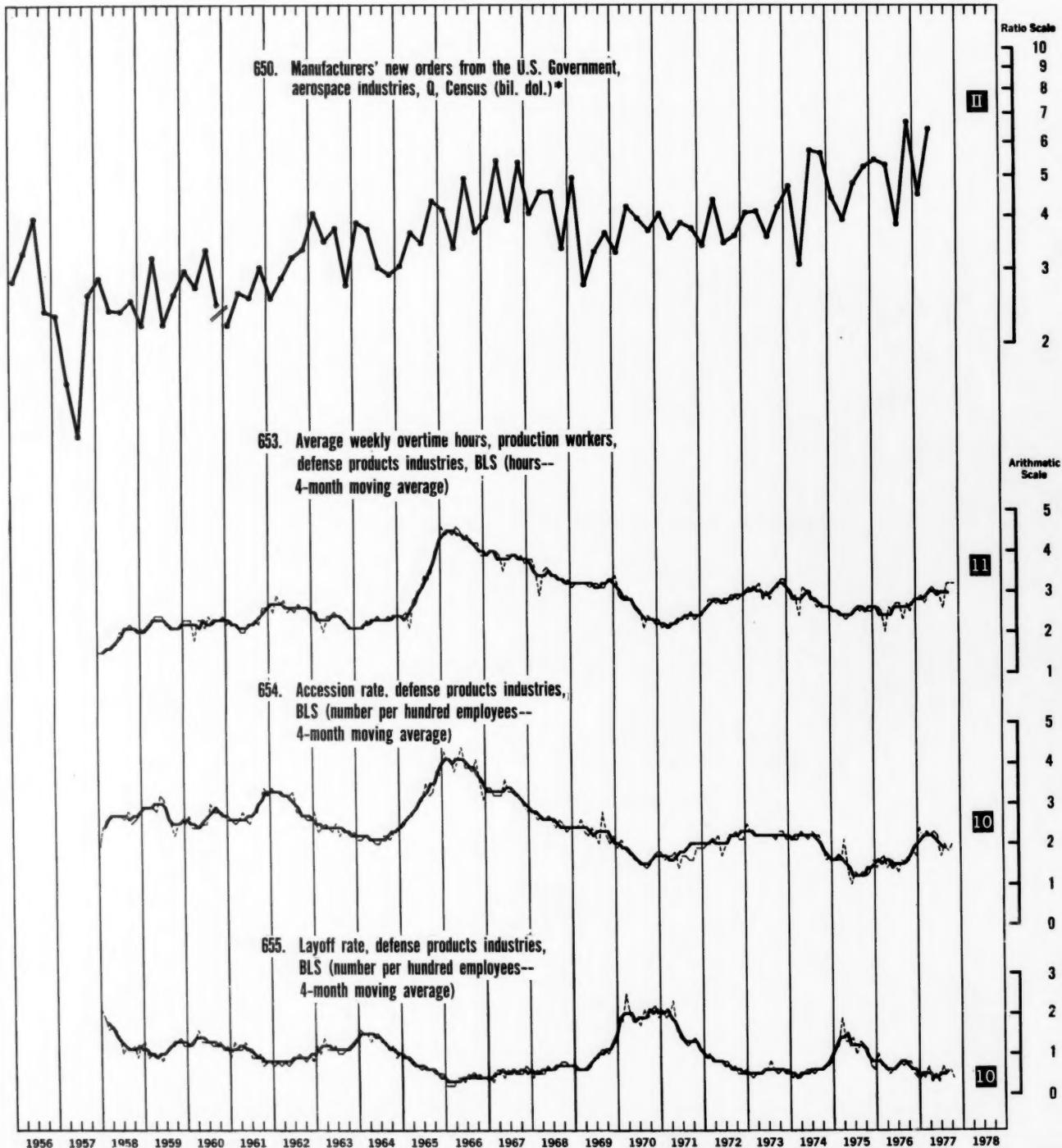
Current data for these series are shown on pages 16 and 20.

defense indicators

CHART

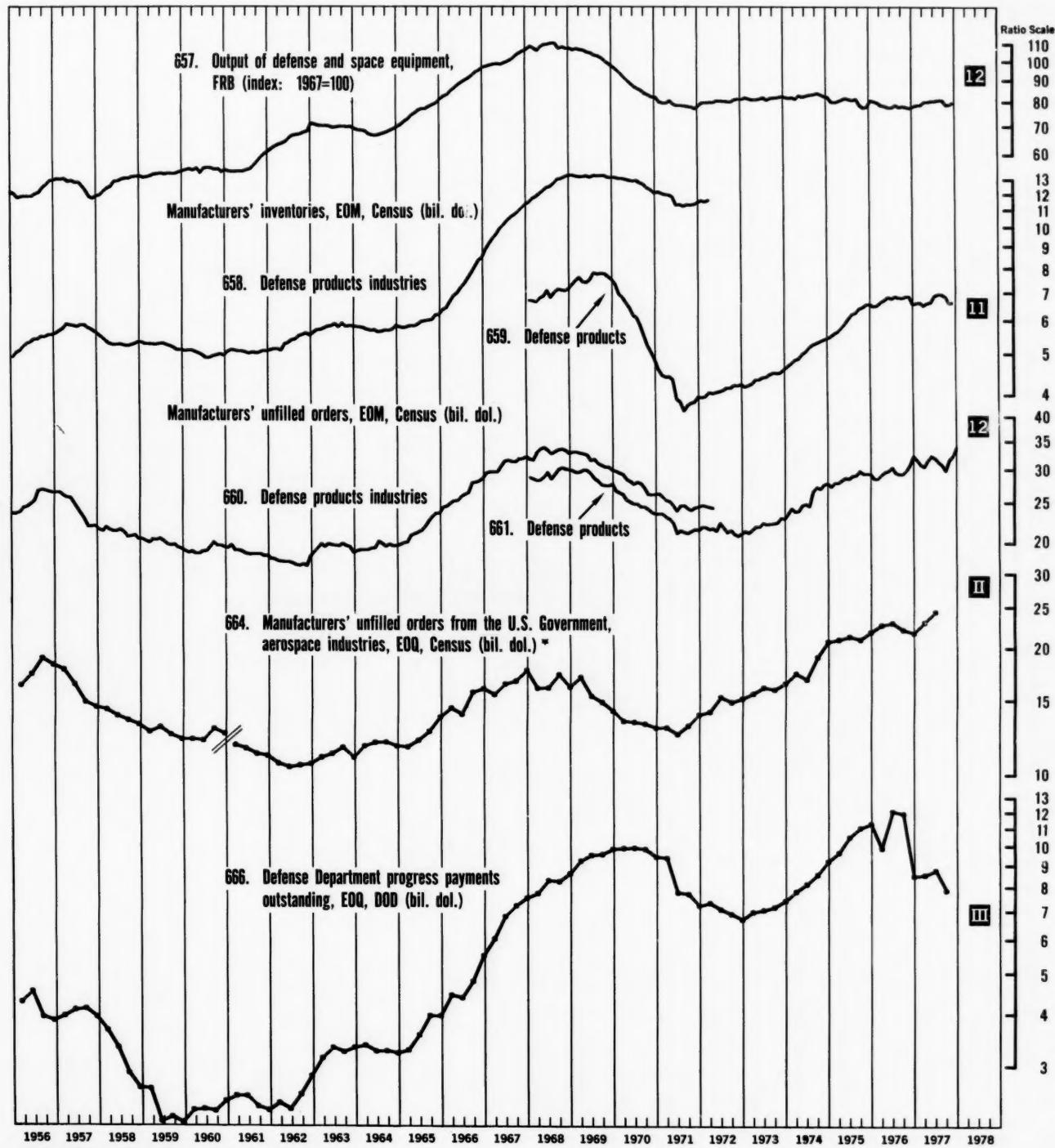
2

Advance Indicators of Defense Activity--Continued



*Data prior to 1961 include orders from non-Government customers.
Current data for these series are shown on pages 20 and 21.

Intermediate and Final Indicators of Defense Activity

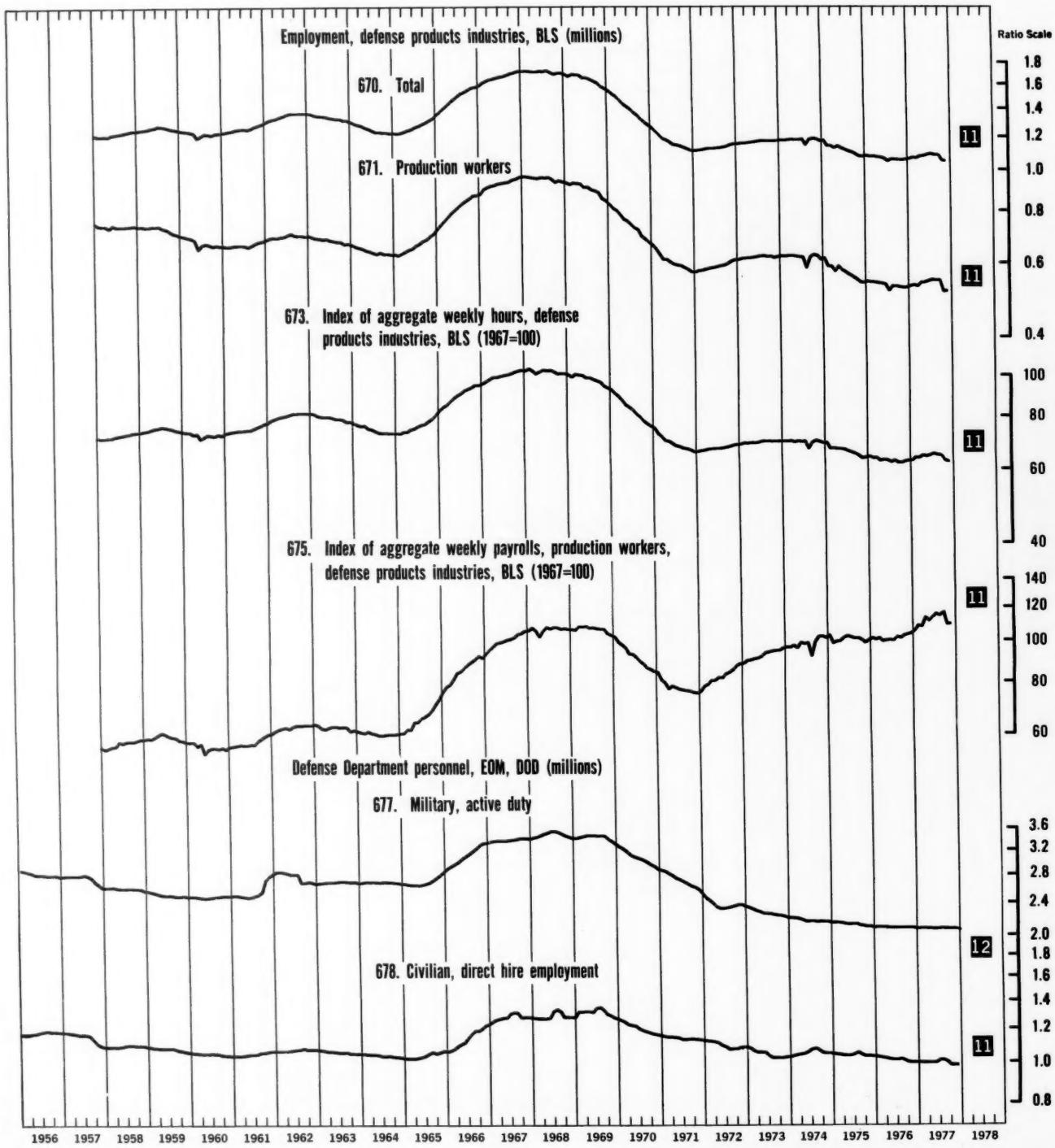


*Data prior to 1961 include orders from non-Government customers.
Current data for these series are shown on page 22.

CHART

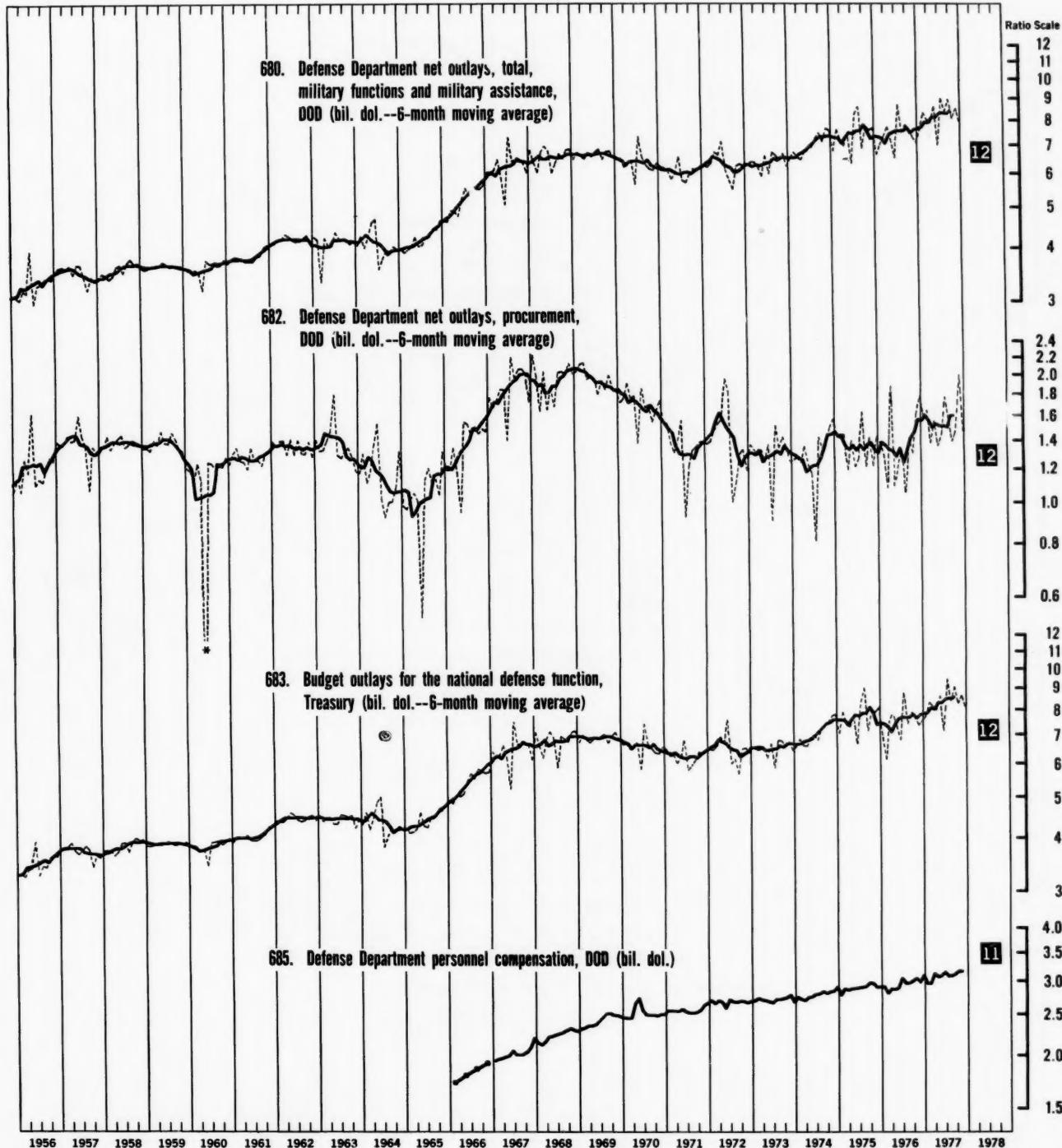
3

Intermediate and Final Indicators of Defense Activity--Continued



Current data for these series are shown on pages 22, 23, and 24.

Intermediate and Final Indicators of Defense Activity--Continued



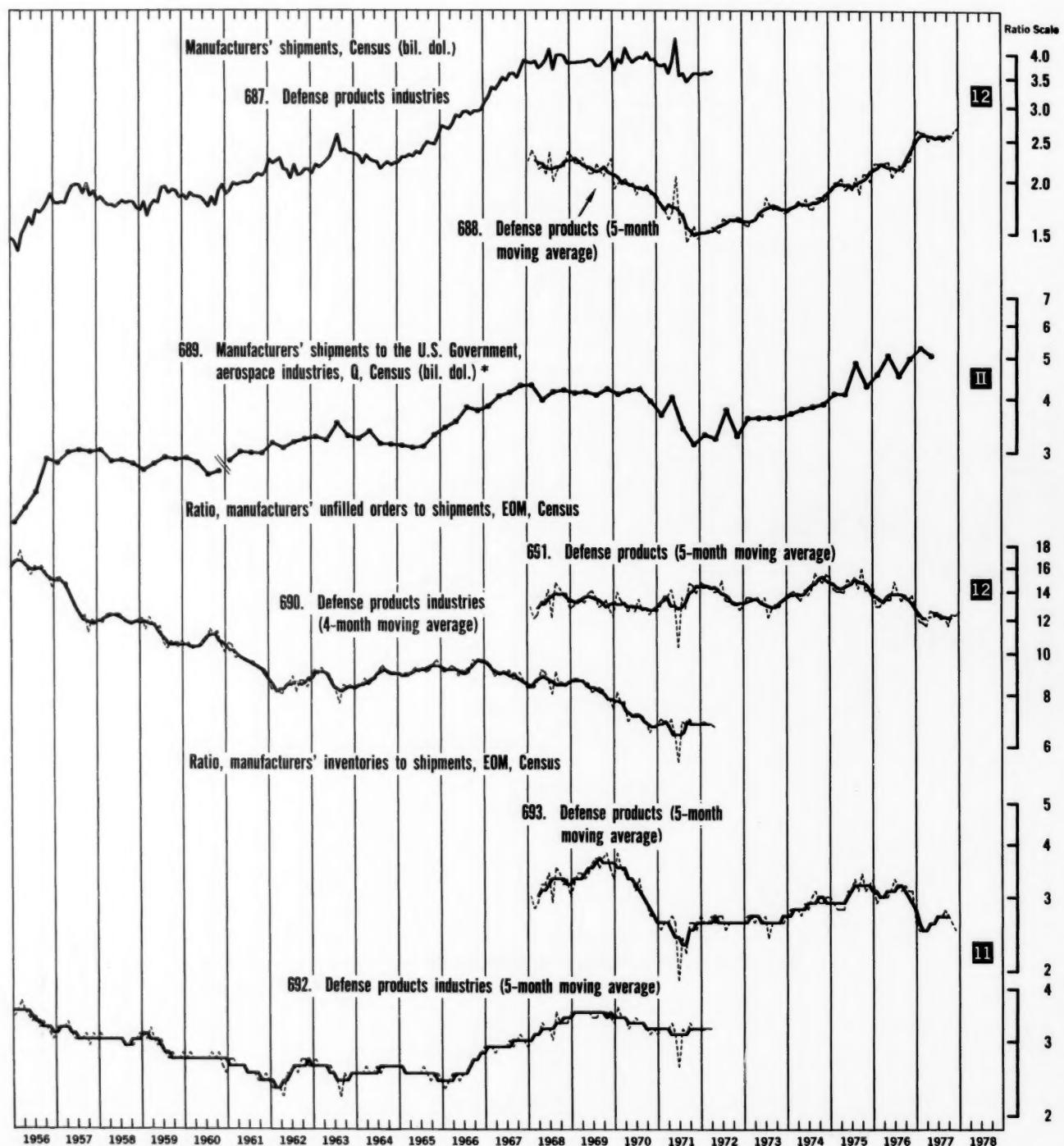
*June 1960 figure for net expenditures for procurement is \$245 million.
Current data for these series are shown on pages 24 and 25.

defense indicators

CHART

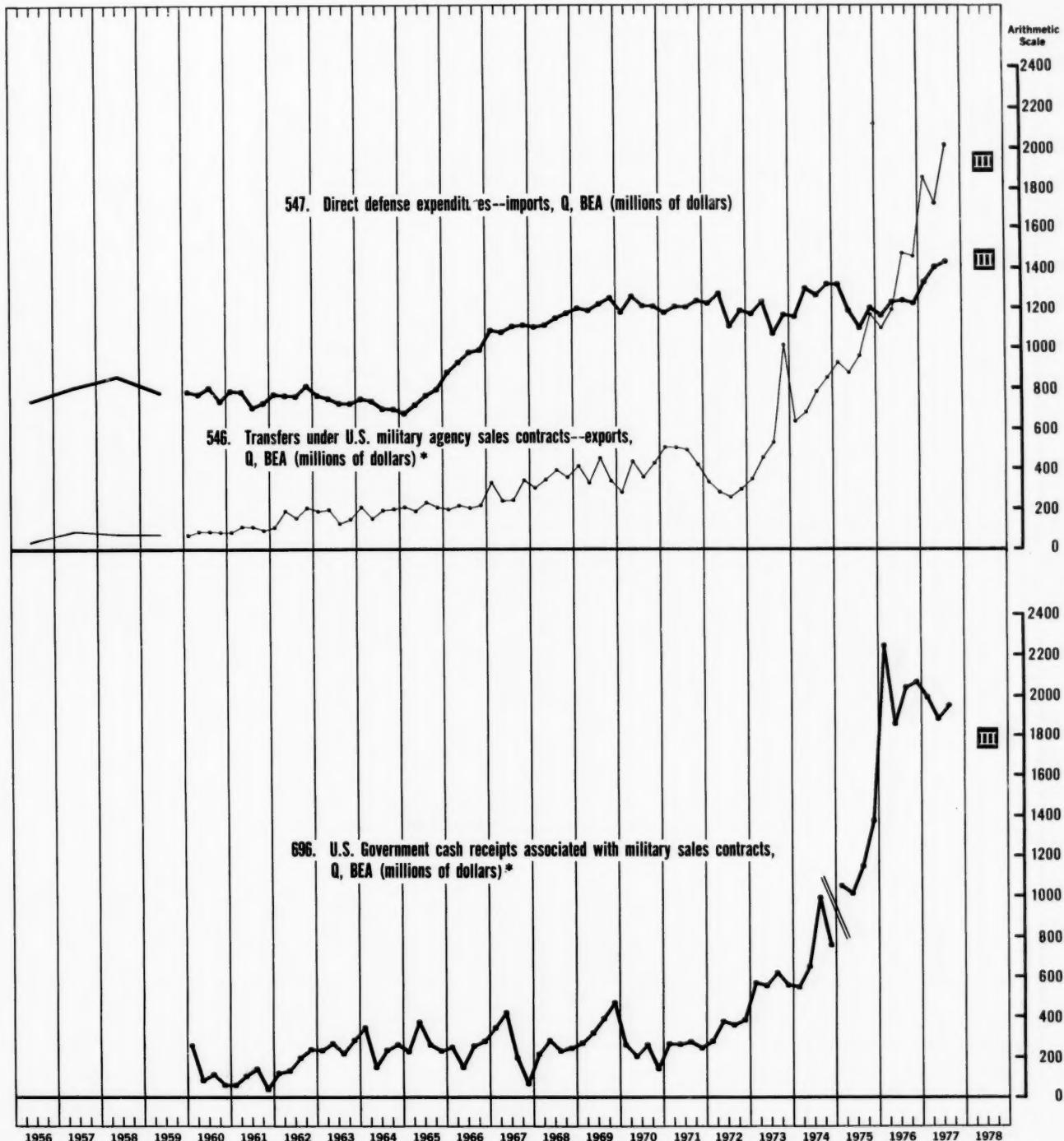
3

Intermediate and Final Indicators of Defense Activity--Continued



*Data prior to 1961 include shipments to non-Government customers.
Current data for these series are shown on page 26.

Defense-Related Balance of Payments Components



*See footnotes 1 and 2 on page 27.
Current data for these series are shown on page 27.

defense indicators

TABLE
1

Gross National Product and National Defense Purchases

Year and quarter	200(a). Gross national product, BEA*	264(a). Federal Government purchases of goods and services, national defense, BEA*	613. National defense purchases as a percent of gross national product, BEA*	200(b). Change in gross national product, BEA*	264(b). Change in Federal Government purchases of goods and services, national defense, BEA*
	(Ann. rate, bil. dol.)	(Ann. rate, bil. dol.)	(Percent)	(Ann. rate, bil. dol.)	(Ann. rate, bil. dol.)
1973					
First quarter.....	1,265.3	74.1	5.9	45.9	0.8
Second quarter.....	1,288.4	73.1	5.7	23.1	-1.0
Third quarter.....	1,317.5	72.5	5.5	29.1	-0.6
Fourth quarter.....	1,355.1	74.4	5.5	37.6	1.9
1974					
First quarter.....	1,369.0	74.6	5.4	13.9	0.2
Second quarter.....	1,400.1	75.8	5.4	31.1	1.2
Third quarter.....	1,430.1	77.9	5.4	30.0	2.1
Fourth quarter.....	1,452.4	79.6	5.5	22.3	1.7
1975					
First quarter.....	1,453.0	81.6	5.6	0.6	2.0
Second quarter.....	1,496.6	83.0	5.5	43.6	1.4
Third quarter.....	1,564.9	84.4	5.4	68.3	1.4
Fourth quarter.....	1,600.7	86.7	5.4	35.8	2.3
1976					
First quarter.....	1,651.2	86.3	5.2	50.5	-0.4
Second quarter.....	1,691.9	86.0	5.1	40.7	-0.3
Third quarter.....	1,727.3	86.4	5.0	35.4	0.4
Fourth quarter.....	1,755.4	88.4	5.0	28.1	2.0
1977					
First quarter.....	1,810.8	89.7	5.0	55.4	1.3
Second quarter.....	1,869.9	93.4	5.0	59.1	3.7
Third quarter.....	1,915.9	95.6	5.0	46.0	2.2
Fourth quarter.....	p1,965.1	p98.6	p5.0	p49.2	p3.0

Note: All data on this page are seasonally adjusted. NA=not available; p=preliminary; r=revised; e=estimated. *Indicates series shown in charts. (See page 5.)

Advance Indicators of Defense Activity

Year and month	Defense Department gross obligations incurred, DOD							
	617. Total			619. Operations		621. Procurement		
	Not seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data— 6-month*	Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data— 6-month*
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)
1975								
January	8,252	7,341	7,916	5,471	5,148	1,895	1,603	1,772
February	6,904	7,467	7,958	4,604	5,220	1,569	1,575	1,755
March	7,526	8,677	7,956	4,787	5,251	1,994	1,960	1,701
April	7,403	7,933	8,033	5,424	5,209	1,147	1,448	1,674
May	6,796	8,199	8,246	4,761	5,121	1,147	1,813	1,711
June	11,027	8,583	8,569	6,275	5,560	2,693	1,644	1,939
July	9,903	8,614	8,440	6,641	5,624	1,510	1,827	1,865
August	9,812	9,406	8,516	5,337	5,327	2,508	2,940	1,891
September	7,705	7,907	8,494	5,203	5,442	1,506	1,515	1,790
October	9,045	8,387	8,385	6,130	5,660	1,733	1,605	1,784
November	6,976	8,069	8,304	4,829	5,334	1,320	1,206	1,722
December	7,156	7,925	8,064	4,895	5,373	1,428	1,612	1,511
1976								
January	8,652	8,132	8,220	6,010	5,729	1,697	1,453	1,594
February	7,206	7,962	8,344	4,745	5,203	1,664	1,672	1,676
March	8,241	8,842	8,461	4,995	5,354	2,093	2,014	1,779
April	8,677	9,134	8,556	5,946	5,784	1,688	2,096	1,841
May	6,825	8,772	8,553	4,828	5,419	1,155	1,828	1,958
June	11,319	8,491	8,365	5,949	5,059	3,218	1,983	1,971
July	9,593	8,116	8,628	6,362	5,369	1,812	2,157	1,993
August	7,427	6,833	9,148	5,055	5,010	1,458	1,747	2,003
September	9,840	10,424	9,412	6,120	6,335	2,152	2,147	2,075
October	12,635	12,255	9,831	7,447	7,012	2,312	2,157	2,289
November	9,620	10,355	10,120	5,561	6,145	2,497	2,258	2,237
December	9,903	11,003	10,641	5,341	5,882	2,855	3,270	2,316
1977								
January	9,838	9,848	10,480	6,352	6,114	2,138	1,842	2,289
February	8,787	9,963	10,216	5,501	6,223	2,206	2,219	2,471
March	8,957	9,458	10,230	5,537	5,928	2,086	1,987	2,599
April	10,092	10,668	(NA)	6,365	6,271	2,640	3,251	(NA)
May	8,141	10,437		5,344	5,984	1,908	3,024	
June	9,450	(¹)		5,739	(¹)	2,077	(¹)	
July	8,331			6,195		1,249		
August	8,763			5,337		1,861		
September	11,642			6,517		3,511		
October	13,810			7,786		2,898		
November	11,106			6,336		2,719		
December	(NA)			(NA)		(NA)		

NA=not available; p=preliminary; r=revised; e=estimated. *Indicates series shown in charts. (See page 6.)

¹See "New Features and Changes for This Issue," page 3.

defense indicators

TABLE

2

Advance Indicators of Defense Activity--Continued

NA=not available; P=preliminary; R=revised; E=estimated. *Indicates series shown in charts. (See pages 6 and 7.)

***Not seasonally adjusted.** See "New Features and Changes for This Issue," page 3.

²See "New Features and Changes for This Issue," page 3.

Advance Indicators of Defense Activity--Continued

Year and month	Defense Department military prime contract awards for work performed in the United States, DOD—Continued						
	628. Ships, not seasonally adjusted	629. Weapons and ammunition		630. Electronic and communications equipment		631. Combat vehicles	
		Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)
1975							
January	325	125	...	414	...	21	...
February	251	160	537	331	1,404	66	288
March	11	217	...	535	...	52	...
April	621	147	...	313	...	23	...
May	94	128	577	587	1,305	86	191
June	858	672	...	696	...	161	...
July	250	52	...	394	...	126	...
August	814	126	545	470	1,410	70	259
September	439	95	...	430	...	90	...
October	80	128	...	439	...	67	...
November	114	66	375	445	1,280	14	172
December	211	146	...	332	...	62	...
1976							
January	310	76	...	263	...	48	...
February	124	101	348	305	1,110	26	238
March	1,213	148	...	442	...	61	...
April	306	158	...	348	...	32	...
May	65	135	447	381	1,204	63	415
June	346	450	...	735	...	512	...
July	506	52	...	207	...	4	...
August	91	90	1,112	506	1,478	150	242
September	396	418	...	664	...	119	...
October	861	108	...	410	...	252	...
November	153	121	453	710	1,778	47	683
December	178	173	...	566	...	204	...
1977							
January	283	90	...	427	...	74	...
February	478	177	427	436	1,470	74	568
March	483	131	...	473	...	152	...
April	322	193	...	615	...	25	...
May	273	225	(¹) ...	521	(¹) ...	71	(¹) ...
June	288	132		512		69	
July	118	133		460		39	
August	283	218		731		65	
September	1,078	661		1,245		170	
October	(NA)	(NA)		(NA)		(NA)	

NA=not available; p=preliminary; r=revised; e=estimated.

¹See "New Features and Changes for This Issue," page 3.

defense indicators

TABLE

2

Advance Indicators of Defense Activity--Continued

Year and month	Defense Department military prime contract awards for work performed in the United States, DOD—Continued							
	632. Other hard goods		633. Soft goods		634. Construction		635. Services	
	Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)
1975								
January	154	...	217	...	168	...	307	
February	143	497	704	1,489	134	481	341	1,396
March	152	...	191	...	127	...	201	...
April	147	...	164	...	156	...	190	
May	165	487	121	658	291	838	211	925
June	399	...	213	...	1,073	...	574	...
July	104	...	811	...	82	...	634	
August	115	532	307	937	61	486	570	1,136
September	150	...	256	...	178	...	204	...
October	201	...	173	...	149	...	216	
November	156	631	214	687	56	605	210	523
December	179	...	244	...	176	...	121	...
1976								
January	190	...	817	...	85	...	244	
February	180	590	330	1,611	107	448	256	1,111
March	166	...	187	...	151	...	230	...
April	173	...	221	...	198	...	179	
May	159	434	120	780	213	611	158	881
June	316	...	243	...	791	...	587	...
July	92	...	287	...	79	...	335	
August	177	792	513	646	196	1,073	504	1,018
September	324	...	171	...	403	...	429	...
October	105	...	1,760	...	42	...	660	
November	226	600	220	2,603	82	385	391	1,356
December	199	...	295	...	136	...	275	...
1977								
January	213	...	163	...	125	...	241	
February	141	635	181	944	101	594	371	1,234
March	222	...	538	...	175	...	242	...
April	237	...	166	...	142	...	211	
May	203	(¹) ...	156	(¹) ...	456	(¹) ...	220	(¹) ...
June	214		200		228		204	
July	271		170		160		215	
August	229		191		531		243	
September	460		253		762		718	
October	(NA)		(NA)		(NA)		(NA)	
November								
December								

NA=not available; p=preliminary; r=revised; e=estimated.

¹See "New Features and Changes for This Issue," page 3.

Advance Indicators of Defense Activity--Continued

Year and month	Defense Department military prime contract awards for work performed in the United States, DOD—Continued					640. Defense Department military prime contract awards for work outside the United States, DOD	
	636. Contracts under \$10,000		637. Educational and nonprofit institutions		638. Civilian Health and Medical Program of the Uniformed Services (CHAMPUS), not seasonally adjusted	Not seasonally adjusted	Seasonally adjusted
	Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted			
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)
1975							
January	372	...	51	...	5	114	...
February	345	1,144	61	205	0	93	388
March	419	...	53	...	2	96	...
April	418	...	42	...	0	73	...
May	367	1,141	35	201	0	86	813
June	635	...	76	...	0	558	...
July	263	...	184	...	5	244	...
August	345	1,218	92	253	1	149	317
September	409	...	80	...	0	124	...
October	374	...	67	...	0	252	...
November	412	1,273	50	192	0	164	941
December	408	...	82	...	0	255	...
1976							
January	327	...	39	...	2	286	...
February	416	1,156	48	163	2	95	681
March	405	...	44	...	2	139	...
April	300	...	68	...	1	147	...
May	430	1,100	50	254	0	93	609
June	625	...	73	...	1	306	...
July	253	...	74	...	0	208	...
August	351	1,458	55	142	0	132	424
September	615	...	74	...	1	347	...
October	201	...	203	...	0	575	...
November	303	892	127	415	0	107	962
December	358	...	78	...	0	175	...
1977							
January	365	...	69	...	0	362	...
February	344	1,279	61	285	0	74	878
March	528	...	91	...	0	191	...
April	420	...	65	...	0	101	...
May	451	(¹) ...	41	(¹) ...	0	103	(¹) ...
June	384		36		0	157	
July	449		47		0	190	
August	464		50		0	174	
September	643		80		0	613	
October	(NA)		(NA)		(NA)	(NA)	
November							
December							

NA=not available; p=preliminary; r=revised; e=estimated.

¹See "New Features and Changes for This Issue," page 3.

defense indicators

TABLE

2

Advance Indicators of Defense Activity--Continued

Year and month	Defense Department gross unpaid obligations outstanding, DOD						648. Manufacturers' new orders, defense products, Census		650. Manufac- turers' new orders from the U.S. Govern- ment, aerospace industries, Census, seasonally adjusted*	
	643. Total		644. Operations		645. Procurement					
	Not seasonally adjusted	Seasonally adjusted*	Not seasonally adjusted	Seasonally adjusted	Not seasonally adjusted	Seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data— 6-month*		
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	
1975										
January	40,819	40,052	7,997	7,625	25,484	24,838	1,398	2,004		
February	40,008	39,875	7,520	7,626	25,452	24,568	2,576	2,147	4,415	
March	39,473	40,198	7,169	7,775	25,688	25,259	1,996	2,118	...	
April	38,589	39,918	7,276	7,794	24,932	24,957	2,445	2,080	...	
May	37,120	40,086	6,746	7,713	24,321	25,099	2,266	2,242	3,912	
June	39,557	40,959	7,303	8,005	25,311	25,438	1,799	2,167	...	
July	e41,470	e41,437	e8,733	e8,548	e25,167	e25,370	2,367	2,262	...	
August	43,248	42,140	8,677	8,132	26,070	26,684	2,130	2,123	4,783	
September	43,084	41,805	8,677	8,216	26,002	26,479	2,563	2,095	...	
October	43,754	41,845	9,259	8,247	26,081	26,238	1,610	2,118	...	
November	42,767	41,468	8,804	8,353	25,810	25,707	2,100	1,963	5,227	
December	41,551	41,309	8,261	8,241	25,507	25,305	1,937	1,974	...	
1976										
January	42,110	41,358	8,947	8,548	25,503	24,905	1,440	2,017	...	
February	41,512	41,459	8,538	8,681	25,586	24,841	2,194	2,197	5,426	
March	41,046	41,866	7,966	8,658	25,783	25,277	2,818	2,247	...	
April	41,029	42,494	8,253	8,827	25,606	25,657	2,690	2,360	...	
May	39,742	42,970	7,795	8,914	25,125	25,929	2,401	2,326	5,272	
June	42,152	43,612	8,037	8,780	26,508	26,482	2,614	2,280	...	
July	43,366	43,251	8,939	8,717	26,537	27,162	1,239	2,169	...	
August	42,525	41,406	8,569	8,025	26,346	26,802	1,919	2,194	3,818	
September	43,351	42,047	8,615	8,160	26,832	27,185	2,153	2,318	...	
October	47,890	45,813	10,624	9,484	27,632	27,827	2,840	2,557	...	
November	48,988	47,517	10,700	10,184	28,934	28,733	3,141	2,675	6,663	
December	50,354	50,103	10,374	10,353	29,348	29,202	4,050	2,670	...	
1977										
January	51,694	50,780	11,150	10,660	29,966	29,465	1,949	2,680	...	
February	52,016	52,016	11,122	11,326	30,485	29,946	1,887	2,806	4,496	
March	51,326	52,373	10,563	11,494	30,550	30,128	2,214	2,832	...	
April	52,309	54,206	10,978	11,729	31,330	31,551	3,597	2,520	..	
May	51,512	55,749	10,574	12,098	31,390	32,562	3,293	2,518	p6,420	
June	51,549	53,308	10,320	11,254	31,449	31,449	2,182	2,536	...	
July	50,898	50,695	10,676	10,395	30,853	31,259	1,932	2,439	...	
August	50,133	48,815	9,792	9,169	30,791	31,292	1,998	2,550	(NA)	
September	50,245	48,734	9,474	8,972	32,473	32,603	1,630	2,597		
October	55,512	53,122	11,412	10,198	33,723	33,455	1,268	p2,954		
November	57,421	55,694	11,835	11,282	34,500	34,057	r3,570			
December	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	p4,326			

NA=not available; p=preliminary; r=revised; e=estimated. *Indicates series shown in charts. (See pages 7 and 8.)

Advance Indicators of Defense Activity--Continued

Year and month	653. Average weekly overtime hours, production workers, defense products industries, BLS			654. Accession rate, defense products industries, BLS			655. Layoff rate, defense products industries, BLS		
	Not seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data-4-month*	Not seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data-4-month*	Not seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data-4-month*
	(Hours)	(Hours)	(Hours)	(Per 100 employees)	(Per 100 employees)	(Per 100 employees)	(Per 100 employees)	(Per 100 employees)	(Per 100 employees)
1975									
January	2.4	2.5	2.6	1.4	1.6	1.6	1.2	1.1	1.0
February	2.4	2.5	2.5	1.3	1.6	1.6	1.3	1.2	1.2
March	2.3	2.5	2.5	1.3	1.6	1.7	2.1	1.9	1.4
April	2.1	2.4	2.4	1.9	2.1	1.6	1.4	1.3	1.4
May	2.0	2.3	2.4	1.3	1.3	1.5	1.3	1.3	1.5
June	2.5	2.4	2.4	1.7	1.0	1.4	1.3	1.4	1.2
July	2.2	2.5	2.4	1.6	1.3	1.2	0.8	1.0	1.2
August	2.6	2.6	2.5	1.6	1.2	1.2	1.2	1.3	1.2
September	2.8	2.5	2.6	1.7	1.3	1.2	1.0	1.2	1.2
October	2.7	2.6	2.6	1.4	1.2	1.2	1.0	1.1	1.1
November	2.7	2.5	2.5	1.0	1.3	1.4	0.8	0.7	0.9
December	2.9	2.5	2.6	0.8	1.6	1.4	0.6	0.6	0.8
1976									
January	2.5	2.6	2.6	1.3	1.4	1.5	1.1	1.0	0.8
February	2.5	2.6	2.6	1.3	1.6	1.6	0.8	0.7	0.8
March	2.4	2.5	2.4	1.5	1.7	1.5	0.8	0.7	0.7
April	1.7	2.0	2.4	1.2	1.4	1.6	0.6	0.5	0.6
May	2.3	2.6	2.4	1.6	1.6	1.6	0.6	0.6	0.6
June	2.5	2.5	2.4	2.1	1.5	1.4	0.6	0.7	0.6
July	2.4	2.7	2.6	1.6	1.3	1.5	0.7	0.8	0.7
August	2.7	2.7	2.6	2.0	1.6	1.5	0.6	0.7	0.8
September	2.6	2.3	2.6	1.9	1.5	1.5	0.6	0.8	0.8
October	2.8	2.7	2.6	1.8	1.6	1.6	0.8	0.8	0.7
November	2.8	2.5	2.6	1.6	1.9	1.7	0.5	0.5	0.6
December	3.2	2.8	2.7	0.9	1.7	1.9	0.3	0.4	0.6
1977									
January	2.7	2.8	2.8	2.2	2.4	2.0	0.6	0.5	0.4
February	2.8	2.9	2.8	1.8	2.1	2.1	0.5	0.4	0.5
March	2.5	2.7	2.8	2.1	2.3	2.2	0.9	0.7	0.5
April	2.6	3.0	2.9	2.0	2.2	2.2	0.4	0.3	0.5
May	2.9	3.1	3.0	2.3	2.3	2.2	0.5	0.5	0.4
June	3.0	3.0	3.0	2.8	2.2	2.1	0.3	0.3	0.4
July	2.8	3.0	2.9	2.0	1.7	2.0	0.6	0.7	0.5
August	2.7	2.6	3.0	2.4	2.0	1.9	0.4	0.5	0.5
September	3.4	3.2	3.0	2.2	1.8	1.9	0.5	0.6	0.6
October	r3.4 p3.5 (NA)	r3.2 p3.2 (NA)	p3.0 (NA)	2.2 (NA)	2.0 (NA)	(NA)	0.4 (NA)	0.4 (NA)	(NA)
November									
December									

NA=not available; p=preliminary; r=revised; e=estimated. *Indicates series shown in charts. (See page 8.)

defense indicators

TABLE

3

Intermediate and Final Indicators of Defense Activity

Year and month	657. Output of defense and space equipment, FRB, seasonally adjusted*	659. Manufacturers' inventories, defense products, Census, seasonally adjusted*	661. Manufacturers' unfilled orders, defense products, Census, seasonally adjusted*	664. Manufacturers' unfilled orders from the U.S. Gov- ernment, aerospace industries, Census, seasonally adjusted*	666. Defense Department progress payments out- standing, DOD, not seasonally adjusted*	670. Employment in defense products industries, total, BLS	
	(Index: 1967=100)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Thous.)	(Thous.)
1975							
January	82.1	5,487	27,221	...	...	1,178	1,175
February	79.9	5,565	27,815	...	...	1,141	1,141
March	79.7	5,639	27,823	20,907	9,609	1,137	1,142
April	80.2	5,750	28,238	...	...	1,121	1,128
May	80.9	5,890	28,604	...	...	1,131	1,140
June	81.6	6,051	28,459	21,230	10,464	1,123	1,127
July	81.0	6,207	28,920	...	...	1,110	1,117
August	80.6	6,252	29,007	...	...	1,100	1,108
September	81.2	6,399	29,706	20,906	11,008	1,104	1,100
October	78.5	6,456	29,237	...	...	1,097	1,090
November	77.3	6,549	29,264	...	...	1,089	1,077
December	77.7	6,568	29,210	21,776	11,257	1,088	1,075
1976							
January	80.5	6,488	28,449	...	...	1,084	1,081
February	80.1	6,523	28,438	...	...	1,075	1,076
March	79.5	6,634	29,069	22,598	9,848	1,071	1,077
April	78.4	6,720	29,550	...	...	1,066	1,072
May	78.1	6,824	29,727	...	...	1,061	1,070
June	77.5	6,774	30,294	22,883	12,041	1,060	1,064
July	77.5	6,846	29,422	...	...	1,043	1,050
August	78.5	6,804	29,153	...	...	1,053	1,060
September	77.6	6,798	29,188	22,020	11,881	1,062	1,059
October	78.0	6,847	29,800	...	...	1,062	1,056
November	77.6	6,847	30,698	...	...	1,066	1,054
December	77.2	6,577	32,231	21,666	8,465	1,070	1,060
1977							
January	78.0	6,609	31,536	...	...	1,067	1,062
February	78.5	6,625	30,809	...	...	1,067	1,069
March	78.5	6,517	30,411	22,962	8,521	1,061	1,067
April	79.9	6,602	31,512	...	...	1,071	1,077
May	80.0	6,637	32,226	...	...	1,071	1,079
June	80.3	6,874	31,857	p24,308	8,735	1,083	1,086
July	80.4	6,936	31,212	...	...	1,084	1,092
August	80.8	6,926	30,707	...	...	1,077	1,084
September	80.9	6,854	29,768	(NA)	7,838	1,089	1,084
October	r78.9	6,596	31,494	...	...	r1,056	r1,050
November	r79.2	6,631	r32,418	...	...	p1,062	p1,051
December	p79.9	(NA)	p34,052	(NA)	(NA)	(NA)	(NA)

NA=not available; p=preliminary; r=revised; e=estimated. *Indicates series shown in charts. (See pages 9 and 10.)

Intermediate and Final Indicators of Defense Activity--Continued

Year and month	671. Employment in defense products industries, production workers, BLS		673. Index of aggregate weekly hours, defense products industries, BLS		675. Index of aggregate weekly payrolls, production workers, defense products industries, BLS	
	Not seasonally adjusted	Seasonally adjusted*	Not seasonally adjusted	Seasonally adjusted*	Not seasonally adjusted	Seasonally adjusted*
	(Thous.)	(Thous.)	(1967=100)	(1967=100)	(1967=100)	(1967=100)
1975						
January	618	615	69.2	69.2	102.8	102.6
February	589	589	67.0	67.0	98.6	98.4
March	585	588	66.8	67.0	99.1	99.4
April	570	574	66.1	66.8	97.6	99.5
May	581	588	66.5	66.8	100.2	101.3
June	573	577	66.4	66.6	101.2	102.3
July	564	570	65.0	66.1	97.9	101.7
August	555	563	64.9	65.6	98.3	101.0
September	558	556	65.5	65.1	102.0	101.2
October	554	549	64.9	64.5	101.5	100.4
November	549	540	64.6	63.5	101.8	98.7
December	549	538	65.0	63.8	104.9	99.8
1976						
January	545	542	64.1	64.1	101.3	101.1
February	540	540	63.5	63.5	100.7	100.4
March	537	539	63.3	63.6	100.8	101.1
April	533	537	62.0	62.7	96.1	99.3
May	530	536	62.6	63.0	99.2	100.0
June	529	533	62.6	62.8	99.4	100.2
July	510	516	61.2	62.2	96.0	99.8
August	520	528	62.0	62.7	99.2	101.8
September	529	528	62.4	62.0	101.9	101.1
October	529	525	62.4	62.0	104.0	102.6
November	532	523	63.5	62.5	106.5	103.4
December	533	524	64.1	62.7	109.2	103.8
1977						
January	533	529	63.0	62.8	106.4	105.5
February	531	531	63.6	63.7	108.5	108.4
March	525	528	63.3	63.6	107.4	107.8
April	533	538	63.5	64.5	109.2	113.1
May	534	539	63.8	64.1	110.3	111.2
June	541	543	64.6	64.6	112.7	113.5
July	539	546	64.0	65.1	110.9	115.3
August	537	545	64.0	64.7	111.5	114.5
September	547	545	65.0	64.6	117.3	116.4
October	r517	r512	r63.0	r62.6	r110.1	r108.6
November	p522	p513	p63.4	p62.5	p112.5	p109.2
December	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)

NA=not available; p=preliminary; r=revised; e=estimated. *Indicates series shown in charts. (See page 10.)

defense indicators

TABLE

3

Intermediate and Final Indicators of Defense Activity--Continued

Year and month	Defense Department personnel, DOD		Defense Department net outlays, DOD				
	677. Military, active duty, not seasonally adjusted*	678. Civilian, direct hire employment, not seasonally adjusted*	680. Total, military functions and military assistance			681. Operations	
			Not seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data-6-month*	Not seasonally adjusted	Seasonally adjusted
	(Thous.)	(Thous.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)
1975							
January	2,145	1,038	7,051	6,766	7,312	4,775	4,648
February	2,146	1,036	7,258	7,590	7,284	4,727	4,924
March	2,137	1,034	7,244	7,190	7,258	4,736	4,831
April	2,127	1,034	7,190	6,958	7,056	4,960	4,856
May	2,124	1,035	7,780	7,494	7,308	4,909	4,941
June	2,128	1,042	7,476	6,336	7,475	4,954	4,747
July	2,129	1,052	7,124	8,278	7,423	4,918	4,977
August	2,111	1,038	7,961	8,594	7,552	5,081	5,029
September	2,105	1,030	6,631	6,880	7,566	4,810	5,016
October	2,097	1,031	7,913	7,732	7,788	5,260	5,131
November	2,099	1,029	7,203	7,574	7,515	4,997	4,988
December	2,084	1,028	7,695	7,672	7,251	5,078	5,067
1976							
January	2,092	1,023	6,649	6,636	7,326	4,887	4,940
February	2,093	1,019	6,962	7,011	7,322	4,848	4,879
March	2,090	1,016	7,642	7,334	7,259	5,026	4,995
April	2,087	1,011	7,872	7,703	7,068	5,297	5,160
May	2,081	1,010	7,042	7,200	7,406	4,889	5,023
June	2,082	1,010	7,843	6,525	7,486	5,170	4,925
July	2,087	1,014	7,433	8,663	7,563	5,050	5,135
August	2,085	1,006	7,163	7,493	7,546	5,059	5,054
September	2,084	997	7,513	7,794	7,562	5,457	5,543
October	2,086	995	7,478	7,600	7,657	4,984	5,015
November	2,082	996	7,301	7,294	7,477	5,277	5,220
December	2,072	995	7,422	7,096	7,614	5,356	5,190
1977							
January	2,077	994	6,979	7,586	7,649	5,262	5,436
February	2,078	995	8,004	8,312	7,697	5,202	5,430
March	2,075	995	8,454	8,006	7,911	5,529	5,501
April	2,071	995	7,850	7,889	7,896	5,487	5,443
May	2,070	997	8,412	8,575	8,125	5,269	5,349
June	2,075	1,009	8,266	7,005	8,135	5,540	5,271
July	2,079	1,008	7,880	8,965	8,290	5,389	5,449
August	2,073	998	8,244	8,370	8,324	5,505	5,402
September	2,075	982	8,795	8,938	8,324	5,820	5,879
October	2,072	983	7,922	8,092	p8,487	5,583	5,756
November	2,069	985	8,829	8,572		5,581	5,403
December	p2,060	(NA)	p8,210	p7,986		p5,616	p5,644

NA=not available; p=preliminary; r=revised; e=estimated. *Indicates series shown in charts. (See pages 10 and 11.)

Intermediate and Final Indicators of Defense Activity--Continued

Year and month	Defense Department net outlays, DOD--Continued			683. Budget outlays for the national defense function, Treasury		685. Defense Department personnel compensation, DOD	
	682. Procurement			Seasonally adjusted*	Moving average of seasonally adjusted data--6-month*	Not seasonally adjusted	Seasonally adjusted*
	Not seasonally adjusted	Seasonally adjusted*	Moving average of seasonally adjusted data--6-month*				
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)
1975							
January	1,427	1,428	1,460	7,039	7,554	2,913	2,768
February	1,351	1,444	1,429	7,896	7,526	2,808	2,869
March	1,500	1,440	1,414	7,385	7,536	2,812	2,850
April	1,220	1,194	1,354	7,297	7,342	2,867	2,870
May	1,467	1,406	1,328	7,788	7,564	2,870	2,877
June	1,409	1,215	1,360	6,649	7,747	2,823	2,887
July	1,225	1,268	1,322	8,367	7,706	2,941	2,895
August	1,559	1,634	1,361	8,996	7,818	2,873	2,910
September	1,191	1,217	1,330	7,140	7,836	2,936	2,961
October	1,500	1,425	1,365	7,971	8,079	3,008	2,954
November	1,081	1,220	1,384	7,896	7,830	2,866	2,893
December	1,319	1,427	1,328	8,103	7,352	2,916	2,904
1976							
January	1,363	1,384	1,305	6,874	7,411	3,018	2,907
February	1,227	1,293	1,382	6,126	7,380	2,820	2,804
March	1,195	1,082	1,361	7,497	7,286	2,887	2,866
April	1,792	1,884	1,330	7,784	7,068	2,845	2,861
May	1,092	1,095	1,321	7,334	7,376	2,851	2,889
June	1,418	1,244	1,281	6,795	7,589	3,007	3,036
July	1,347	1,326	1,338	8,717	7,656	2,963	2,960
August	1,063	1,055	1,241	7,409	7,649	2,962	2,962
September	1,356	1,423	1,328	7,896	7,653	2,978	2,997
October	1,337	1,303	1,418	7,743	7,776	3,026	3,037
November	1,502	1,617	1,462	7,360	7,610	3,020	2,978
December	1,745	1,781	1,561	7,530	7,764	3,097	3,088
1977							
January	1,524	1,594	1,554	7,723	7,802	3,034	2,951
February	1,570	1,646	1,596	8,331	7,845	2,886	2,951
March	1,511	1,381	1,552	8,125	8,060	3,137	3,118
April	1,558	1,555	1,496	8,000	7,996	3,008	3,063
May	1,324	1,358	1,526	8,650	8,289	3,084	3,087
June	1,643	1,442	1,509	7,146	8,296	3,112	3,143
July	1,572	1,772	1,511	9,483	8,455	3,054	3,082
August	1,521	1,547	1,502	8,370	8,504	3,146	3,109
September	1,372	1,391	1,611	9,079	8,513	3,108	3,136
October	1,512	1,500	pl,615	8,294	8,682	r3,170	r3,180
November	1,877	2,014		8,704		p3,226	p3,175
December	pl,578	pl,468		8,164		(NA)	(NA)

NA=not available; p=preliminary; r=revised; e=estimated. *Indicates series shown in charts. (See page 11.)

defense indicators

TABLE

3

Intermediate and Final Indicators of Defense Activity--Continued

Year and month	688. Manufacturers' shipments, defense products, Census		689. Manufacturers' shipments to the U.S. Government, aerospace industries, Census, seasonally adjusted*	691. Ratio, manufacturers' unfilled orders to shipments, defense products, Census		693. Ratio, manufacturers' inventories to shipments, defense products, Census	
	Seasonally adjusted*	Moving average of seasonally adjusted data—5-month*		Seasonally adjusted*	Moving average of seasonally adjusted data—5-month*	Seasonally adjusted*	Moving average of seasonally adjusted data—5-month*
	(Mil. dol.)	(Mil. dol.)	(Mil. dol.)	(Ratio)	(Ratio)	(Ratio)	(Ratio)
1975							
January	1,923	1,902	...	14.2	14.6	2.9	2.9
February	1,982	1,950	4,105	14.0	14.3	2.8	2.9
March	1,989	1,965	...	14.0	14.2	2.8	2.9
April	2,030	1,969	...	13.9	14.3	2.8	2.9
May	1,901	1,954	4,104	15.0	14.5	3.1	3.0
June	1,943	1,965	...	14.6	14.6	3.1	3.1
July	1,906	1,931	...	15.2	15.0	3.3	3.2
August	2,043	1,967	4,847	14.2	14.8	3.1	3.2
September	1,864	1,993	...	15.9	14.7	3.4	3.2
October	2,079	2,010	...	14.1	14.6	3.1	3.2
November	2,073	2,042	4,283	14.1	14.3	3.2	3.2
December	1,991	2,110	...	14.7	13.7	3.3	3.1
1976							
January	2,201	2,132	...	12.9	13.6	2.9	3.1
February	2,206	2,159	4,564	12.9	13.4	3.0	3.0
March	2,187	2,206	...	13.3	13.2	3.0	3.0
April	2,210	2,175	...	13.4	13.6	3.0	3.1
May	2,224	2,156	5,056	13.4	13.8	3.1	3.1
June	2,047	2,156	...	14.8	13.8	3.3	3.1
July	2,111	2,137	...	13.9	13.8	3.2	3.2
August	2,188	2,138	4,528	13.3	13.8	3.1	3.2
September	2,117	2,178	...	13.8	13.6	3.2	3.1
October	2,228	2,258	...	13.4	13.4	3.1	3.0
November	2,244	2,350	4,970	13.7	13.1	3.1	2.9
December	2,515	2,450	...	12.8	12.7	2.6	2.8
1977							
January	2,647	2,526	...	11.9	12.4	2.5	2.6
February	2,615	2,577	5,277	11.8	12.1	2.5	2.5
March	2,611	2,589	...	11.6	12.1	2.5	2.5
April	2,496	2,570	...	12.6	12.2	2.6	2.6
May	2,578	2,563	p5,054	12.5	12.3	2.6	2.6
June	2,551	2,541	...	12.5	12.4	2.7	2.7
July	2,578	2,555	...	12.1	12.2	2.7	2.7
August	2,501	2,548	(NA)	12.3	12.2	2.8	2.7
September	2,568	r2,567		11.6	r12.1	2.7	2.7
October	2,543	p2,590		12.4	p12.2	2.6	(NA)
November	r2,646			r12.3		2.5	
December	p2,692			p12.6		(NA)	

NA=not available; p=preliminary; r=revised; e=estimated. *Indicates series shown in charts. (See page 12.)

Defense-Related Balance of Payments Components

Year and quarter	546. Transfers under U.S. military agency sales contracts (exports), BEA ¹		547. Direct defense expenditures (imports), BEA, not seasonally adjusted*	696. U.S. Government cash receipts associated with military sales contracts, BEA ²	
	Not seasonally adjusted	Seasonally adjusted*		Not seasonally* adjusted	Seasonally adjusted*
	(Mil. dol.)	(Mil. dol.)		(Mil. dol.)	(Mil. dol.)
1973					
First quarter.....	332	347	1,169	520	566
Second quarter.....	504	455	1,231	544	552
Third quarter.....	489	531	1,067	610	617
Fourth quarter.....	1,017	1,009	1,162	616	555
1974					
First quarter.....	644	638	1,153	497	546
Second quarter.....	738	683	1,298	642	650
Third quarter.....	720	781	1,265	995	990
Fourth quarter.....	850	850	1,319	808	756
1975					
First quarter.....	946	924	1,317	1,050	(NA)
Second quarter.....	888	874	1,185	1,013	
Third quarter.....	902	957	1,096	1,148	
Fourth quarter.....	1,183	1,164	1,198	1,376	
1976					
First quarter.....	1,132	1,095	1,160	2,246	
Second quarter.....	1,193	1,189	1,228	1,858	
Third quarter.....	1,403	1,472	1,237	2,041	
Fourth quarter.....	1,486	1,457	1,222	2,068	
1977					
First quarter.....	1,912	1,845	1,329	1,992	
Second quarter.....	1,702	1,714	1,403	1,883	
Third quarter.....	p1,918	p2,008	p1,431	p1,955	

NA=not available; p=preliminary; r=revised; e=estimated. *Indicates series shown in charts. (See page 13.)

¹Includes deliveries for which Israel has been released from its contractual liability to pay.²Excludes funds made available to release Israel from its contractual liability to pay for defense articles and services purchased through military sales contracts. Quarterly expenditures for such purpose under Public Law 93-199 and subsequent legislation amounted to (in millions): 1974, IIQ, \$623; IIIQ, \$223; IVQ, \$91; 1975, IQ, \$187; IIQ, \$124; IIIQ, \$83; IVQ, \$242; 1976, IQ, \$16; IIQ, \$100; IIIQ, \$743; IVQ, \$5; 1977, IQ, \$138; IIQ, \$245; IIIQ, \$117.

Appendix A. SEASONAL ADJUSTMENT FACTORS

Series title	1977											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
MONTHLY SERIES												
Defense Department gross obligations incurred:												
617. Total ¹	99.9	88.2	94.7	94.6	78.0	135.2	112.5	108.5	99.8	105.3	92.4	90.0
619. Operations ¹	103.9	88.4	93.4	101.5	89.3	117.8	116.5	101.2	96.9	108.2	90.3	90.8
621. Procurement.....	116.1	99.4	105.0	81.2	63.1	161.4	84.7	82.6	100.7	106.8	111.2	87.3
623. Gross obligations incurred outside the Federal Government for national defense ¹	101.3	84.9	99.6	94.1	82.8	126.3	117.7	110.0	96.5	95.2	103.3	90.4
625. Defense Department military prime contract awards for work performed in the United States.....	96.6	82.4	89.3	73.3	70.6	177.9	115.5	107.1	101.4	111.0	86.7	87.4
Defense Department gross unpaid obligations outstanding: ²												
643. Total.....	101.8	100.0	98.0	96.5	92.4	96.7	100.4	102.7	103.1	104.5	103.1	100.5
644. Operations.....	104.6	98.2	91.9	93.6	87.4	91.7	102.7	106.8	105.6	111.9	104.9	100.2
645. Procurement.....	101.7	101.8	101.4	99.3	96.4	100.0	98.7	98.4	99.6	100.8	101.3	100.5
648. Manufacturers' new orders, defense products ³	108.0	93.7	97.3	82.5	65.3	117.1	186.8	94.1	102.5	106.9	83.8	101.0
653. Average weekly overtime hours, production workers, defense products industries ⁴	-.1	-.1	-.2	-.4	-.2	.0	-.2	.1	.2	.2	.3	.4
654. Accession rate, defense products industries ⁴	-.2	-.3	-.2	-.2	-.0	.6	-.3	.4	.4	.2	-.4	-.8
655. Layoff rate, defense products industries ⁴	-.1	-.1	-.2	-.1	-.0	-.0	-.1	-.1	-.1	-.0	-.0	-.1
657. Output of defense and space equipment ⁵	100.3	100.3	100.4	99.1	99.6	100.3	98.5	98.2	99.6	100.0	101.0	102.3
659. Manufacturers' inventories, defense products ³	98.5	100.1	101.1	100.7	99.8	100.4	100.1	100.3	100.3	100.3	100.9	100.4
661. Manufacturers' unfilled orders, defense products ³	101.2	100.9	100.6	99.1	96.2	97.4	101.4	101.2	100.9	101.5	100.0	99.9
Employment in defense products industries:												
670. Total.....	100.5	99.8	99.5	99.4	99.3	99.7	99.2	99.3	100.4	100.6	101.0	100.9
671. Production workers.....	100.8	99.9	99.5	99.2	99.0	99.6	98.7	98.5	100.4	100.9	101.6	101.7
673. Index of aggregate weekly hours, defense products industries.....	100.3	99.9	99.6	98.5	99.6	99.9	98.3	99.0	100.6	100.6	101.5	102.1
675. Index of aggregate weekly payrolls, production workers, defense products industries.....	100.9	100.1	99.7	96.6	99.2	99.3	96.2	97.4	100.7	101.4	103.0	105.2
Defense Department net outlays:												
680. Total, military functions and military assistance ¹	92.0	96.3	105.6	99.5	98.1	118.0	87.9	98.5	98.4	97.9	103.0	102.8
681. Operations ¹	96.8	95.8	100.5	100.8	98.5	105.1	98.9	101.9	99.0	97.0	103.3	99.5
682. Procurement ¹	95.6	95.4	109.4	100.2	97.5	113.9	88.7	98.3	98.6	100.8	93.2	107.5
683. Budget outlays for the national defense function ¹	91.7	97.6	105.5	99.7	98.9	117.6	84.4	100.5	98.9	97.5	103.1	103.1
685. Defense Department personnel compensation ¹	102.8	97.8	100.6	98.2	99.9	99.0	99.1	101.2	99.1	99.7	101.6	100.3
688. Manufacturers' shipments, defense products ³	87.6	97.6	100.4	98.5	100.5	105.4	94.8	97.4	106.1	101.4	96.3	103.8
QUARTERLY SERIES												
	1Q						IIQ					IVQ
200. Gross national product ³	95.9						99.9					105.1
264. Fed. Govt. purchases of goods and services, national defense ³	98.3						102.8					101.4
546. Transfers under U.S. military agency sales contracts—exports ⁵	37						4					29
Defense Department military prime contract awards:												
626. Aircraft.....	109.0						90.1					95.0
627. Missile and space systems.....	68.9						80.7					105.3
629. Weapons and ammunition.....	93.2						167.3					88.8
630. Electronic and communications equipment.....	90.9						121.2					94.8
631. Combat vehicles.....	52.8						164.5					73.6
632. Other hard goods.....	90.7						146.1					88.3
633. Soft goods.....	93.4						72.2					87.4
634. Construction.....	67.5						197.2					67.5
635. Services.....	69.2						103.6					97.8
636. Under \$10,000.....	96.7						122.8					96.6
637. Educational and nonprofit institutions.....	77.6						76.0					98.2
640. Outside U.S.	71.4						92.3					89.1
Aerospace industries:												
650. Manufacturers' new orders from the U.S. Government	90.5						82.7					104.4
664. Manufacturers' unfilled orders from the U.S. Government	101.3						96.2					102.1
689. Manufacturers' shipments to the U.S. Government	93.8						102.6					102.6

NOTE: The seasonal adjustment factors presented in this table were computed using the techniques described in the Bureau of the Census Technical Paper No. 15, *The X-11 Variant of the Census Method II Seasonal Adjustment Program*.

Monthly data for Defense Department military prime contract awards by commodity category (series 626 to 640) have not been adjusted for seasonal variation. The series on direct defense expenditures—imports (series 547), Defense Department progress payments outstanding (series 666), and Defense Department personnel (series 677 and 678) contain no measurable seasonal variation.

¹ Factors are products of seasonal and trading-day factors.

² Prior to 1972, data for gross unpaid obligations outstanding are not available for a number

of months but these gaps were filled with averages of preceding and following months for purposes of estimating seasonal variation.

³ These series have been adjusted by the source agencies. The factors shown here are implicit seasonal factors for the calendar year 1976 and are derived by dividing the seasonally unadjusted data by the seasonally adjusted data.

⁴ These series have been seasonally adjusted using the additive version of the seasonal adjustment program. Seasonally adjusted data are derived by subtracting the adjustment factor from the unadjusted data. Seasonally adjusted data for other series are derived by dividing the seasonal factors into the unadjusted data.

⁵ This series is the total of component series which have been adjusted separately by the source agency. The factors shown here are implicit seasonal factors for the calendar year 1976 and are derived by subtracting the seasonally adjusted data from the seasonally unadjusted data.

Appendix B. AVERAGE CHANGES AND RELATED MEASURES OF VARIABILITY

Part 1. Monthly Series

Series title	Period covered	\bar{O}	\bar{C}_I	\bar{T}	\bar{C}	\bar{I}/\bar{C}	MCD	Average duration of run (ADR)	
								\bar{C}_I	MCD
Defense Department gross obligations incurred:									
617. Total	Jan. '57-Jan. '76 . . .	18.28	6.98	6.89	0.72	9.53	6	1.53	2.30
619. Operations	July '59-Jan. '76 . . .	8.98	2.77	2.66	.65	4.09	4	1.69	3.00
621. Procurement	Jan. '57-Jan. '76 . . .	44.28	22.39	22.27	1.54	14.44	6	1.46	2.08
623. Gross obligations incurred outside the Federal Government for national defense	July '63-Sept. '75 . . .	14.17	7.92	7.82	.73	10.72	6	1.52	2.61
625. Defense Department military prime contract awards for work performed in the United States, total	Jan. '57-Jan. '76 . . .	32.78	15.55	15.41	1.35	11.42	6	1.42	2.05
Defense Department gross unpaid obligations outstanding:									
643. Total	Jan. '57-Jan. '76 . . .	2.13	1.32	.95	.88	1.08	2	2.65	3.98
644. Operations	Jan. '67-Jan. '76 . . .	5.59	2.68	2.37	1.13	2.10	3	1.96	5.05
645. Procurement	Jan. '67-Jan. '76 . . .	2.19	1.52	1.07	.94	1.14	2	2.08	4.12
Manufacturers' new orders:									
647. Defense products industries	Jan. '57-Mar. '72 . . .	(NA)	15.11	14.89	.97	15.32	6	1.58	2.33
648. Defense products	Feb. '68-Jan. '76 . . .	(NA)	21.50	21.43	1.47	14.59	6	1.56	1.80
*653. Average weekly overtime hours, production workers, defense products industries (hours)	Jan. '58-Jan. '76 . . .	.22	.11	.11	.03	3.14	4	2.50	3.70
*654. Accession rate, defense products industries (per 100 employees)	Jan. '58-Jan. '76 . . .	.38	.16	.15	.05	3.12	4	2.16	4.18
*655. Layoff rate, defense products industries (per 100 employees)	Jan. '58-Jan. '76 . . .	.17	.14	.13	.04	3.14	4	1.93	4.18
657. Output of defense and space equipment	Jan. '57-Jan. '76 . . .	(NA)	.96	.50	.75	.67	1	3.40	3.40
Manufacturers' inventories:									
658. Defense products industries	Jan. '57-Mar. '72 . . .	(NA)	1.04	.52	.85	.62	1	2.80	2.80
659. Defense products	Jan. '68-Jan. '76 . . .	(NA)	1.75	1.13	1.29	.88	1	3.10	3.10
Manufacturers' unfilled orders:									
660. Defense products industries	Jan. '57-Mar. '72 . . .	(NA)	1.23	.90	.83	1.09	2	2.76	3.42
661. Defense products	Jan. '68-Jan. '76 . . .	(NA)	1.51	1.18	.93	1.27	2	2.04	4.13
Employment in defense products industries:									
670. Total	Jan. '58-Jan. '76 . . .	.76	.70	.29	.59	.50	1	4.91	4.91
671. Production workers	Jan. '58-Jan. '76 . . .	1.08	.93	.51	.70	.73	1	3.72	3.72
673. Index of aggregate weekly hours, defense products industries	Jan. '58-Jan. '76 . . .	.95	.76	.39	.60	.65	1	4.00	4.00
675. Index of aggregate weekly payrolls, production workers, defense products industries	Jan. '58-Jan. '76 . . .	1.72	1.14	.75	.78	.96	1	2.92	2.92
Defense Department personnel:									
677. Military, active duty (1)	Jan. '57-Jan. '76 . . .	.62	(NA)	.27	.55	.48	1	3.86	3.86
678. Civilian, direct hire employment (1)	Jan. '57-Jan. '76 . . .	.55	(NA)	.34	.42	.81	1	4.30	4.30
Defense Department net outlays:									
680. Total, military functions and military assistance	Jan. '57-Jan. '76 . . .	8.89	4.31	4.19	.77	5.42	6	1.70	3.10
681. Operations	July '59-Jan. '76 . . .	7.07	3.62	3.41	.73	4.69	5	1.58	2.34
682. Procurement	Jan. '57-Jan. '76 . . .	15.10	11.77	11.65	1.59	7.32	6	1.57	2.90
683. Budget outlays for the national defense function	Jan. '57-Jan. '76 . . .	8.87	4.27	4.18	.73	5.73	6	1.58	2.97
685. Defense Department personnel compensation	Jan. '67-Jan. '76 . . .	2.70	1.33	1.13	.49	2.32	4	2.57	4.38
Manufacturers' shipments:									
687. Defense products industries	Jan. '57-Mar. '72 . . .	(NA)	2.67	2.49	.87	2.85	3	1.64	3.40
688. Defense products	Jan. '68-Jan. '76 . . .	(NA)	4.40	4.34	.98	4.41	5	1.57	2.71
Ratio, manufacturers' unfilled orders to shipments:									
690. Defense products industries	Jan. '57-Mar. '72 . . .	(NA)	2.95	2.71	.96	2.82	4	1.90	3.81
691. Defense products	Jan. '68-Jan. '76 . . .	(NA)	4.93	4.81	1.01	4.77	5	1.69	2.85
Ratio, manufacturers' inventories to shipments:									
692. Defense products industries	Jan. '57-Mar. '72 . . .	(NA)	2.84	2.90	.72	4.01	5	2.46	5.74
693. Defense products	Jan. '68-Jan. '76 . . .	(NA)	5.29	5.18	1.13	4.57	5	1.96	3.07

NA = not available.

*Measures for these series are based on actual changes rather than percent changes (see definition below). (1) indicates measures are based on unadjusted data.

BRIEF DEFINITIONS OF MEASURES SHOWN IN PART 1

The measures in this appendix provide a historical perspective for interpreting current changes in each series. They are derived using the Census X-11 seasonal adjustment program. Brief definitions of the measures are given below; more complete definitions appear in *Electronic Computers and Business Indicators* by Julius Shiskin, issued as Occasional Paper 57 by the National Bureau of Economic Research, 1957 (reprinted from *Journal of Business*, October 1957).

" \bar{O} " is the average month-to-month percent change, without regard to sign, in the original unadjusted series. (See final paragraph below for exceptions to these definitions.)

" \bar{C}_I " is the same for the seasonally adjusted series.

" \bar{C} " is the same for the short-term trend, which is a smooth, flexible moving average of the seasonally adjusted series.

" \bar{T} " is the same for the irregular component, which is obtained by dividing the seasonally adjusted series by the short-term trend.

" \bar{I}/\bar{C} " measures the relative smoothness (small values) or irregularity (large values) of the seasonally adjusted series. It is the ratio of the average monthly percent change (without regard to sign) in the irregular component to the average monthly percent change (without regard to sign) in the short-term trend.

"MCD" (months for cyclical dominance) estimates the number of months required for the short-term trend to dominate the irregular component. Average percent changes are computed for spans of from 1 to 12 months for both the irregular component and the short-term trend. MCD is the shortest span of months for which the average percent change (without regard to sign) in the short-term trend is greater than that in the irregular component. All MCD's greater than "5" are shown as "6".

Appendix B. AVERAGE CHANGES AND RELATED MEASURES OF VARIABILITY—Continued

"Average Duration of Run" (ADR) is another measure of smoothness and is equal to the average number of consecutive monthly changes in the same direction in any series of observations. When there is no change between two observations, a change in the same direction as the preceding change is assumed. The ADR is shown for the seasonally adjusted series (CI) and the MCD curve, which is a moving average (with the number of terms equal to MCD) of the seasonally adjusted series. A comparison of these measures with the expected ADR of a random series indicates whether the changes approximate those of a random series. In a random series, the expected ADR is 1.5 and the actual values fall between 1.36 and 1.75 about 95 percent of the time. For a moving average of a random series, the expected ADR is 2.

Measures for series identified with an asterisk (*) are computed by an additive method. This method is used for series with zero or negative data, series which could approach zero, and series expressed in percent. In this method, the measures are defined the same as above except for two differences: (1) the measures are based on actual month-to-month changes (rather than percent changes) and (2) the irregular component is obtained by subtracting the short-term trend from the seasonally adjusted series. The average changes shown above for the components of such a series are in the same unit of measure as the series itself. The unit is indicated in the series title.

Part 2. Quarterly Series

Series title	Period covered	0	CI	T	C	T/C	QCD	Average duration of run (ADR)	
								CI	QCD
200. Gross national product.....	IQ '57-IVQ '75.....	(NA)	1.84	0.55	1.76	0.20	1	8.33	8.33
264. Federal Government purchases of goods and services, national defense.....	IQ '57-IVQ '75.....	(NA)	1.95	.79	1.70	.46	1	3.26	3.26
*546. Transfers under U.S. military agency sales contracts—exports (mil. dol.).....	IQ '60-IVQ '75.....	79.21	65.13	48.28	34.19	1.41	2	1.70	2.30
*547. Direct defense expenditures—imports (mil. dol.) @.....	IQ '60-IVQ '75.....	42.32	(NA)	36.13	24.65	1.47	2	1.66	2.82
*613. National defense purchases as a percent of GNP (percent).....	IQ '57-IVQ '75.....	(NA)	.16	.07	.15	.46	1	5.36	5.36
650. Manufacturers' new orders from the U.S. Government, aerospace industries.....	IQ '61-IVQ '75.....	24.44	17.96	14.82	5.85	2.53	3	1.44	1.73
664. Manufacturers' unfilled orders from the U.S. Government, aerospace industries.....	IQ '61-IVQ '75.....	4.55	3.91	2.44	2.68	.91	1	2.27	2.27
666. Defense Department progress payments outstanding @.....	IQ '57-IVQ '75.....	4.80	(NA)	2.06	4.35	.47	1	2.78	2.78
689. Manufacturers' shipments to the U.S. Government, aerospace industries	IQ '61-IVQ '75.....	7.04	4.27	3.43	2.11	1.62	2	1.84	2.76
*696. U.S. Government cash receipts associated with military sales contracts (million dollars).....	IQ '60-IVQ '75.....	107.60	83.62	61.48	45.74	1.34	2	1.57	2.82

NA = not available.

*Measures for these series are based on actual changes rather than percent changes (see definition below). @ indicates measures are based on unadjusted data.

BRIEF DEFINITIONS OF MEASURES SHOWN IN PART 2

These measures are defined the same as those in part 1 except that they are based on quarter-to-quarter percent changes. For example, \bar{C}_I is the average quarter-to-quarter percent change (without regard to sign) in the seasonally adjusted series.

In deriving "QCD" (quarters for cyclical dominance), average percent changes are computed for spans of from one to four quarters for the irregular component and the short-term trend. QCD is the shortest span of quarters for

which the average percent change (without regard to sign) in the short-term trend is greater than that in the irregular component. All QCD's greater than "3" are shown as "4". The "Average Duration of Run" (ADR) measures are also expressed in quarters.

As in part 1, measures for series identified with an asterisk (*) are computed by an additive method. This method is the same as that used for the monthly series except for the use of quarterly data rather than monthly.



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ALPHABETICAL INDEX—SERIES FINDING GUIDE

Series title	Series number	Current issue (page numbers)		Historical data (issue date)	Series descriptions (issue date)	Series title	Series number	Current issue (page numbers)		Historical data (issue date)	Series descriptions (issue date)
		Charts	Tables					Charts	Tables		
Accession rate, defense products industries	654	8	21	10/77	4/73	Hours, defense products industries	673	10	23	10/77	4/73
Aerospace industries						Inventories, manufacturers'					
Manufacturers' new orders from U.S. Government	650	See New orders.				Defense products	659	9	22	2/77	2/73
Manufacturers' shipments to U.S. Government	689	See Shipments.				Defense products industries	658	9	...	1/72	2/73
Manufacturers' unfilled orders from U.S. Government	664	See Unfilled orders.				Ratio to shipments, defense products	693	12	26	2/77	2/73
Balance of payments (defense-related)						Ratio to shipments, defense products industries	692	12	...	11/72	2/73
Cash receipts associated with military sales contracts	696	13	27	10/77	10/73	Layoff rate, defense products industries	655	8	21	10/77	4/73
Direct defense expenditures	547	13	27	10/77	10/73	Military personnel, Defense Department	677	10	24	9/76	8/68
Transfers under military agency sales contracts	546	13	27	10/77	10/73	Military prime contract awards—See Contract awards.					
Budget outlays for national defense function	683	See Outlays.				Net outlays, Defense Department—See Outlays.					
Cash receipts associated with military sales contracts	696	See Balance of payments.				New orders, manufacturers'					
Civilian personnel, Defense Department	678	10	24	9/76	8/68	Defense products	648	7	20	2/77	2/73
Compensation						Defense products industries	647	7	...	11/72	2/73
Payrolls, aggregate weekly, defense products	675	10	23	10/77	4/73	From Government, aerospace industries	650	8	20	10/77	2/73
Personnel compensation, Defense Department	685	11	25	7/76	8/68	Obligations incurred, gross					
Contract awards, military arms						Defense Department, operations	619	...	15	11/77	8/68
Aircraft	626	...	16	10/76	8/68	Defense Department, procurement	621	6	15	11/77	8/68
Civilian Health and Medical Program	638	...	19	10/76	8/68	Defense Department, total	617	6	15	11/77	8/68
Contract vehicles	631	...	17	10/76	8/68	Outside Government for national defense	623	6	16	11/77	10/73
Construction	634	...	18	10/76	8/68	Obligations outstanding, gross unpaid					
Contracts under \$10,000	636	...	19	10/76	8/68	Defense Department, operations	644	...	20	12/77	8/68
Educational and nonprofit institutions	637	...	19	10/76	8/68	Defense Department, procurement	645	...	20	12/77	8/68
Electronic and communications equipment	630	...	17	10/76	8/68	Defense Department, total	643	7	20	12/77	8/68
Mobile and space systems	627	...	16	10/76	8/68	Operations, Defense Department					
Other hard goods	632	...	18	10/76	8/68	Net outlays	619	See Outlays.			
Services	635	...	18	10/76	8/68	Obligations incurred	619	See Obligations incurred.			
Ships	628	...	17	10/76	8/68	Unpaid obligations outstanding	644	See Obligations outstanding.			
Soft goods	633	...	18	10/76	8/68	Orders—See New orders and Unfilled orders.					
Total	625	7	16	10/76	8/68	Outlays					
Weapons and ammunition	629	...	17	10/76	8/68	Budget outlays for national defense function	683	11	25	11/77	10/73
Work outside the United States	640	...	19	10/76	8/68	Defense Department, operations	681	...	24	12/77	8/68
Defense and space equipment, output						Defense Department, procurement	682	11	25	12/77	8/68
Defense Department	657	See Output of defense and space equipment.				Defense Department, total	680	11	24	12/77	8/68
Gross obligations incurred—See Obligations incurred.						Output of defense and space equipment	657	9	22	10/77	10/73
Gross unpaid obligations outstanding—See						Overtime hours, defense products industries	653	8	21	10/77	4/73
Obligations outstanding.						Obligations incurred, gross					
Military prime contract awards—See Contract awards.						Defense Department, operations	619	...	15	11/77	8/68
Net outlays—See Outlays.						Defense Department, procurement	621	6	15	11/77	8/68
Personnel compensation						Defense Department, total	617	6	15	11/77	8/68
Personnel—See Civilian personnel and Military personnel.						Operations, Defense Department	623	6	16	11/77	10/73
Progress payments outstanding						Net outlays	619	See Outlays.			
Direct defense expenditures						Obligations incurred	619	See Obligations incurred.			
Employment						Unpaid obligations outstanding	644	See Obligations outstanding.			
Accession rate, defense products industries	654	See Accession rate.				Orders—See New orders and Unfilled orders.					
Employment, production workers, defense products industries	671	10	23	10/77	4/73	Outlays	682	See Outlays.			
Employment, total, defense products industries	670	10	22	10/77	4/73	Obligations incurred	621	See Obligations incurred.			
Hours, defense products industries	673	See Hours.				Unpaid obligations outstanding	645	See Obligations outstanding.			
Layoff rate, defense products industries	655	See Layoff rate.				Progress payments outstanding, Defense Department	666	9	22	10/77	8/68
Overtime hours, defense products industries	653	See Overtime hours.				Purchases of goods and services for national defense	264	See Gross national product.			
Personnel—See Civilian personnel and Military personnel.						Gross national product					
Expenditures—See Outlays.						Obligations incurred, gross					
Federal purchases of goods and services for national defense	264	See Gross national product.				Defense products	688	12	26	2/77	2/73
Gross national product						Defense products industries	687	12	...	11/72	2/73
Federal purchases of goods and services for national defense	264	5	14	10/77	10/73	Defense products	693	See Inventories.			
Gross national product	200	5	14	10/77	10/73	Ratio, inventories to shipments, defense products	692	See Unfilled orders.			
National defense purchases as percent of GNP	613	5	14	10/77	10/73	Ratio, inventories to shipments, defense products industries	691	See Unfilled orders.			
Gross obligations incurred—See Obligations incurred.						Ratio, unfilled orders to shipments, defense products	690	12	26	10/77	2/73
Gross unpaid obligations outstanding—See Obligations outstanding.						Ratio, unfilled orders to shipments, defense products industries	661	9	22	2/77	2/73
						To Government, aerospace industries	660	9	...	7/71	2/73
						From Government, aerospace industries	664	9	22	10/77	2/73
						Ratio, shipments, defense products	691	12	26	2/77	2/73
						Ratio, shipments, defense products industries	690	12	...	11/72	2/73
						Unpaid obligations outstanding—See Obligations outstanding.					

